BRITISH GUIANA.
DEPARTMENT OF AGRICULTURE.

SUGAR BULLETIN No. 7.

FIELD EXPERIMENTS WITH SUGAR CANE, VII.

BY

C. HOLMAN B. WILLIAMS,
Sugar Agronomist and Plant Breeder,

AND

C. CAMERON,
Field Manager.

WITH

A FOREWORD

BY

PROFESSOR J. SYDNEY DASH,
Director of Agriculture.

IMPERIAL MYCOLOGICAL INSTITUTE
6 JULY 1938

THE "DAILY CHRONICLE," LTD., GEORGETOWN, DEMERARA,
1938.

BRITISH GUIANA.

DEPARTMENT OF AGRICULTURE.

SUGAR BULLETIN No. 7.

FIELD EXPERIMENTS WITH SUGAR CANE, VII.

BY

C. HOLMAN B. WILLIAMS,
Sugar Agronomist and Plant Breeder,

AND

C. CAMERON,
Field Manager.

WITH

A FOREWORD

BY

PROFESSOR J. SYDNEY DASH,
Director of Agriculture.

THE "DAILY CHRONICLE," LTD., GEORGETOWN, DEMERARA,
1938.

Digitized by the Internet Archive
in 2025

https://archive.org/details/sugar-bulletin-department-of-agriculture-british-guiana_1938_7

SUGAR EXPERIMENT STATIONS' COMMITTEE, JUNE, 1938.

Director of Agriculture (*Chairman*),

Mr. J. C. Gibson,

Mr. J. Bee, (*Mr. J. Sutherland acting*),

Mr. G. M. Eccles, (*Mr. H. F. Chapman acting*),

Hon. M. B. G. Austin, O.B.E.,

Mr. A. Murison,

Mr. R. E. Rhodes,

Mr. C. L. C. Bourne (*Secretary*),

Note :—The cost of publishing this Bulletin has been met from the funds of the Sugar Experiment Stations' Committee.

LIST OF COLLABORATING STAFF.

ADMINISTRATION.

J. Sydney Dash, ...	Director of Agriculture.
F. Burnett, ...	Deputy Director of Agriculture.

SUGAR EXPERIMENT STATIONS.

C. Holman B. Williams,	Sugar Agronomist and Plant Breeder.
C. Cameron, ...	Field Manager.
L. A. Forte, ...	„ Assistant.
B. A. MacArthur, ...	„ „
H. B. Singh, ...	Laboratory Assistant.
A. V. Wan Ping, ...	„ „
H. Paul, G. R. Dias, W. McMurdoch, (*Juniors*)	„ „
J. B. Bourne, ...	Statistical Clerk.

DEPARTMENT OF AGRICULTURE.

D. W. Duthie,*	Chemist.
C. L. C. Bourne,*	Assistant Chemist.
J. D. Gillespie, ...	Agricultural Superintendent.

**Responsible for soil analyses and the supervision of the juice laboratory.*

TABLE OF CONTENTS.

	Page
Foreword—	i
Introduction—	1
Variety Trials—	1
Plant Cane Variety Trials	2
Sophia	2
Berbice	14
East Demerara	19
West Demerara	24
First Ratoon Variety Trials	27
Sophia	27
Berbice	37
East Demerara	40
West Demerara	47
Second Ratoon Variety Trials	52
Sophia	52
Berbice	57
East Demerara	60
West Demerara	64
Discussion and Summary of Results	65
Manurial Trials—	69
Experiments with Nitrogenous Manures	69
Sulphate of Ammonia on Flood-fallowed Frontland ...	69
Plant Canes, P.O.J. 2878	69
First Ratoons, P.O.J. 2878	70
Second Ratoons, P.O.J. 2878	72
Third Ratoons, P.O.J. 2878	74
Third Ratoons, Diamond 10	77
Sulphate of Ammonia on Pegassy Clay	79
Plant Canes, P.O.J. 2878	79
First Ratoons, P.O.J. 2878	80
Second Ratoons, P.O.J. 2878	83
Nitrogenous and Phosphatic Manures on Pegassy Clay ...	84
Plant Canes, P.O.J. 2878	84
Experiments with Liming Materials	90
On Flood-fallowed Frontland Soils, Second Ratoons, ...	90

TABLE OF CONTENTS.—(CONTINUED).

	PAGE
Experiments with Phosphatic Manures	92
Superphosphate of Lime on Flood-fallowed Frontland ...	92
Plant Canes, P.O.J. 2878	92
First Ratoons, P.O.J. 2878	94
Basic Slag on Pegassy Clay	96
Plant Canes, P.O.J. 2878	96
Nitrogenous and Phosphatic Manures on Pegassy Clay ...	96
Plant Canes, P.O.J. 2878	96
Basic Slag on Pegassy Clay	96
First Ratoons, P.O.J. 2878	96
Superphosphate of Lime on Pegassy Clay	97
Third Ratoons, P.O.J. 2878	97
Experiments with Potassic Manures	100
Sulphate of Potash on Flood-fallowed Frontland	100
Plant Canes, P.O.J. 2878	100
First Ratoons, P.O.J. 2878	100
Sulphate of Potash on Pegassy Clay	101
Plant Canes, P.O.J. 2878	101
First Ratoons, P.O.J. 2878	103
Discussion and Summary	103
Nitrogenous Fertilisers	103
Frontland	103
Pegassy Clay	104
Liming Materials	104
Phosphatic Manures	105
Potassic Manures	106
FLOOD-FALLOWING TRIALS—	107
Field 28 T.L., Pln. Port Mourant	107
Field H., Pln. Lusignan	110

FOREWORD.

The sugar research work of the year ending June 30, 1938, and recorded in *Sugar Bulletin* No. 7, has followed similar lines to that of previous years.

Breeding and variety investigations continue to receive primary consideration while in estate practice the year under review has seen a very rapid increase in the expansion of the variety P.O.J. 2878, the all-round usefulness of which, in most districts of the Colony, has been fully demonstrated. Tolerant to both drought and flood conditions, with strong ratooning qualities and ability to produce quick cover, its performance in the field is steadily placing it above all other varieties in popularity. Under British Guiana conditions it yields a juice of good quality and does not give the trouble in factories which has been reported from other parts of the Caribbean zone. As experience has been gained in dealing with this cane, its peculiarities and possible defects, at first feared, do not appear to offer any real difficulty in a modern plant. Diamond 10 continues to be popular, especially on the higher lands of the Demerara River areas. It is a vigorous ratooner with excellent juice qualities.

The old favourite, D. 625, which a few years ago occupied 90 per cent. of the cane area, is steadily disappearing, and the percentage figure is now only 20. Under certain conditions it still gives a satisfactory yield as plants but falls off in ratoons. Its growth habit and general field characters make this variety more costly to establish than the two previous ones.

There are a number of newer varieties bred from 1930 onwards which show promise and which are being tested in small scale commercial trials. Special mention must be made of the seedling D. 166/34, the result of a cross between P.O.J. 2878 and *Sorghum*, which has shown such outstanding vigour that small lots are being distributed for observation under estate conditions. It will be appreciated that this variety has not yet reached the stage where results are available from replicated tests ; nevertheless, it shows sufficient early merit to justify its being placed in observation plots.

The year 1937 has been another satisfactory one from the point of view of sugar production although the total output did not quite reach the record figure of 195,944 tons in 1936. Exports, however, were the highest on record as they included a substantial carry-over from the previous year. The average yield per acre was not so high as in 1936 owing to unfavourable weather conditions and the fact that a change in field policy had to be undertaken in view of the coming into force, in the latter part of the year, of the sugar restriction agreement. The returns to date for 1938, however, indicate that the recent high average records will be maintained and probably surpassed.

The fertiliser requirements of the crop, as will be seen, continue to receive full and careful attention. Definite answers can now be supplied in the matter of nitrogenous requirements of both plants and ratoons in relation to the present commercial varieties. Generally speaking, the work so far indicates that little in the way of additional returns may be expected from the use of phosphatic manures except perhaps on certain pegassy areas. Potash investigations have not proceeded far enough to enable any conclusions to be drawn but its interaction with nitrogen has brought out some very interesting points in connection with the influence of manuring on juice quality. The position is fully set out in that section of the *Bulletin* dealing with the work on manures.

The problem of soil acidity still continues to be a baffling one. No benefits appear to be derived from light applications of lime ; on the other hand, it has been clearly demonstrated that the sustained use of sulphate of ammonia in heavy doses can bring about marked and significant increases in acidity in a single crop cycle of four years and, further, as stated in the *Bulletin*, there is evidence available that the conditions are not greatly ameliorated, as had been hoped, by the operations of flood-fallowing following the last harvest.

Sulphate of ammonia is at present the only nitrogenous fertiliser in general use, but investigations have been started with the use of other manures such as Nicifos, nitrate of soda and nitro-chalk. In some areas where phosphates are deficient, Nicifos has given indications of usefulness, but there is no evidence that it is more efficient than sulphate of ammonia or nitro-chalk in combination with basic slag. In the meantime, the Department adheres to the advice previously given in connection with the liming programme : the application of one ton of lime or limestone per acre at planting—that is, once in three or four years depending on the range of the crop cycle. This is being stressed more as an insurance than as likely to give an immediate cash return. Considerable fundamental work is required on this problem of soil acidity, which has now become a major one, and a programme of laboratory and other investigations is engaging the attention of the Chemist, Dr. D. W. Duthie, successor to Mr. R. R. Follett-Smith, whose valuable services in connection with the soil and sugar work from its inception under the re-organisation of the Department of Agriculture have been rewarded by his appointment to a more lucrative post as consulting chemist to a group of sugar firms.

The economic study of flood-fallowing, *e.g.*, duration of fallow, liming before or after flooding, addition of molasses and vegetation to flood-water, etc., has not been brought to finality ; while additional information is urgently required, progress will be slow unless greater facilities are provided for the prosecution of the work on sugar estates. This need is stressed and the strong appeal made to Attorneys and Managers in the last *Bulletin* is here renewed.

J. SYDNEY DASH,

Director of Agriculture.

FIELD EXPERIMENTS WITH SUGAR CANE, VII.

BY

C. HOLMAN B. WILLIAMS, *Sugar Agronomist and Plant Breeder,*

AND

C. CAMERON, *Field Manager.*

INTRODUCTION.

Seventy-four variety, twenty-one manurial and two flood-fallowing trials were reaped during the year ended June 30, 1938; their results are presented in this Bulletin. The method of conducting the experiments has been described in *Sugar Bulletin* No. 1, and the present Bulletin is arranged similarly to the six of the series which have already appeared.

Cordial thanks are extended to the Managers and Staffs of the sugar estates for their courtesy and co-operation. Mr. R. R. Follett-Smith, who was formerly intimately connected with this work, has also been extremely helpful.

VARIETY TRIALS.

The variety trials are considered under four sub-sections, *viz.*,

(a) Plant cane variety trials,

(b) First ratoon variety trials,

(c) Second ratoon variety trials,

(d) Discussion and summary.

In Appendix I will be found tables comparing the monthly rainfall recorded at each trial site during the progress of the experiments with the mean monthly rainfall experienced there during preceding years; the variations from the monthly normals are also indictated for each trial.

Soil and subsoil samples from the various sites have been examined in the laboratory. The results of the analyses will be found in Appendix II.

SUB-SECTION A.—PLANT CANE VARIETY TRIALS.

Plant Cane Variety Trials Reaped at Sophia Sugar Experiment Station.

Table I presents a list of the plant cane variety trials reaped at the Sophia Sugar Experiment Station during the period under review.

Table I.—Plant Cane Variety Trials Reaped at Sophia Experiment Station.

Field.	Age of Canes, Months.	Date of		Number of		Type of Layout.
		Planting.	Reaping.	Varieties.	Replicates.	
4 East B	11.50	7.V.37	23.IV.38	7	5	Randomised Blocks.
13 ,,	13.25	22.I.37	1.III.38	13	5	,,
14 ,,	13.75	9.X.36	30.XI.37	4	6	,,
16 ,, A	13.50	28.VIII.36	13.X.37	4	5	,,
16 ,, B	13.50	28.VIII.36	13.X.37	2	5	,,
16 ,, C	13.50	28.VIII.36	13.X.37	5	5	Latin Square.
17 ,,	13.25	29.VIII.36	9.X.37	7	4	Randomised Blocks.
2 West A	13.75	26.VI.36	16.VIII.37	3	5	,,
2 ,, B	13.75	26.VI.36	16.VIII.37	4	4	Latin Square.
2 ,, C	13.75	26.VI.36	16.VIII.37	2	4	Randomised Blocks.
2 ,, D	13.75	26.VI.36	16.VIII.37	2	4	,,
4 ,, A	15.00	8.VIII.36	12.XI.37	4	5	,,
4 ,, B	15.00	8.VIII.36	12.XI.37	5	5	Latin Square.
4 ,, C	15.00	8.VIII.36	12.XI.37	3	5	Randomised Blocks.
4 ,, D	15.00	8.VIII.36	12.XI.37	5	5	Latin Square.
6 ,,	11.25	16.X.36	22.IX.37	11	6	Randomised Blocks.
13 ,,	12.50	25.II.37	14.III.38	10	5	,,
16 ,,	12.50	18.XI.36	3.XII.37	16	5	,,

Sophia—Field 4 E.—Plant Canes.

Table II and Figure I present the results secured from Field 4 E., Sophia.

Table II.—Results of a Variety Trial in Field 4 E., Sophia.

Plants, 11.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
Mean Yields:	D. 456/33	18.99	15.56	4.29	88.7	2.90	121.85
	P.O.J. 2878	19.78	14.76	4.75	88.2	2.87	120.59
	D. 75/30	21.83	12.54	8.33	84.6	2.75	115.55
	D. 450/33	16.82	13.58	4.43	87.5	2.27	95.38
	D. 330/33	16.78	11.85	5.22	86.2	1.98	83.19
	D. 50/30	14.16	14.03	5.15	88.4	1.96	82.35
	D. 178/29	13.53	14.43	5.33	89.1	1.95	81.93
	Mean:					2.38	100.00
	Standard Error:					0.21	8.82
	Significant Difference, 20 : 1 :					0.61	25.63

D. 456/33 and D. 450/33, both seedlings of P.O.J. 2878 x Diamond 10, were tried here for the first time. The field got a bad start and yields were not high, but D. 456/33 and D. 75/30 (Badila x D. 625) gave good accounts of themselves. The former showed good juice characteristics while the latter has shown, time and again, that it is a heavy yielder.

Rainfall on this trial was abnormally high for some three quarters of the growing period and yields were depressed. Considering this factor and the rather early reaping, juices were, on the whole, good.

The topsoil of Field 4 E., Sophia, is a highly acidic clay overlying a slightly acid clay. The organic matter in both top and subsoil is about the average, the carbon: nitrogen ratio of the topsoil being wide. The salinity of the topsoil is somewhat below the average, and the subsoil not excessive. The theoretical lime requirements of both topsoil and subsoil are normal.

Sophia—Field 13 E.—Plant Canes.

The results from Field 13 E., Sophia, are presented in Table III and Figure I.

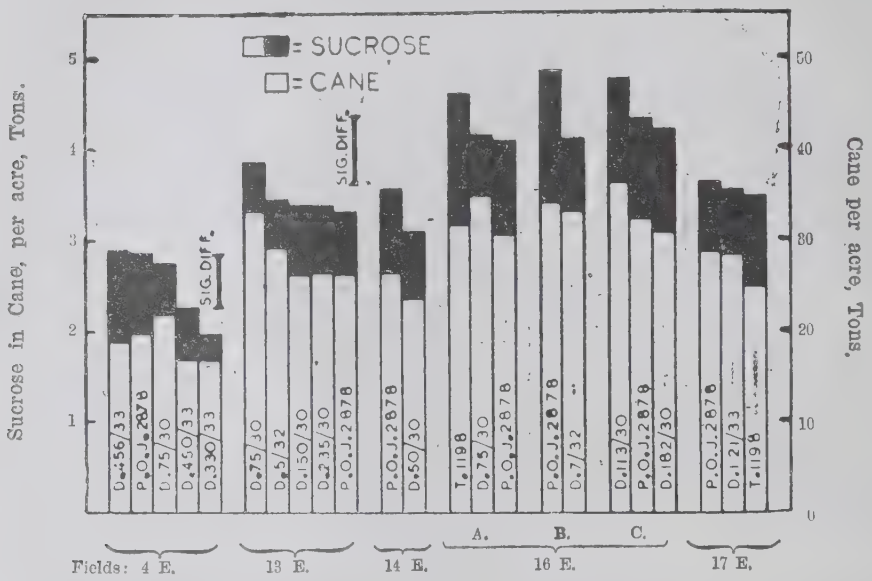
TABLE III.—Results of a Variety Trial in Field 13 E., Sophia.

PLANTS, 13.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS:	D. 75/30	33.15	11.64	14.98	81.0	3.86	134.96
	D. 5/32	29.26	11.91	8.21	84.0	3.44	120.28
	D. 150/30	26.21	13.10	9 17	85.2	3.39	118.53
	D. 235/30	26.35	12.79	6.84	86.6	3.38	118.18
	P.O.J. 2878	26.31	12.66	9.25	85.6	3.31	115.73
	D. 1758/22	24.42	12.14	8.62	84.2	2.98	104.20
	D. 12/32	25.79	11.36	8.80	84.1	2.91	101.75
	D. 2/31	22.18	12.56	6.03	85.6	2.79	97.55
	D. 147/30	21.66	12.44	9.97	84.2	2.67	93.36
	D. 10/32	22.99	11.36	9.40	81.7	2.65	92.66
	D. 170/30	20.85	10.61	8.02	82.0	2.19	76.57
	D. 3/31	18.40	10.76	12.80	79.7	1.96	68.53
	D. 4/31	13.18	12.21	10.77	83.3	1.67	58.39
	Mean:					2.86	100.00
	Standard Error:					0.27	9.44
	Significant Difference, 20 : 1 :					0.78	27.27

FIG. I.

Sucrose and Cane Yields from Plant Canes at Sophia.



D. 75/30 (Badila x D. 625), which heads the list, has a number of good results to its credit and there appears to be little doubt but that it is a heavy yielder with somewhat mediocre juice. D. 5/32 (S.C. 12/4), which has not been tested before, shows some promise. The next two canes on the list have shown promise in previous experiments.

This trial was rather dry for the first three months after planting then there were three months of abnormally high precipitation. There followed five months of moderate to dry weather, and excessive rains just before harvest.

The topsoil of Field 13 E., Sophia, is a slightly acidic silt overlying a slightly alkaline silt. The organic matter in the topsoil is below normal while that of the subsoil is above. The carbon : nitrogen ratio of the topsoil is average while that of the subsoil is wide. The salinity of the topsoil is normal but that of the subsoil is high. The theoretical lime requirements of both topsoil and subsoil are low.

Sophia—Field 14 E.—Plant Canes.

Table IV and Figure I show the results obtained from Field 14 E., Sophia.

TABLE IV.—Results of a Variety Trial in Field 14 E., Sophia.

PLANTS, 13.75 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS:	P.O.J. 2878	26.43	13.35	5.61	88.5	3.57	118.21
	D. 50/30	23.48	13.07	5.79	88.7	3.10	102.65
	D. 164/30	21.81	12.82	5.29	88.6	2.74	90.73
	D. 67/30	20.59	12.99	5.32	88.4	2.69	89.07
	Mean:					3.02	100.00
	Standard Error:					—	—
	Significant Difference, 20 : 1 :					—	—

The cane was mature at harvest and the purities were satisfactory, but yields were rather low and none of the canes tested approached P.O.J. 2878 in yield.

The total precipitation on this field was 20.6 inches above the normal. Unfortunately, the excesses occurred in the wet months while the dry months were drier than usual.

The topsoil of Field 14 E., Sophia, is an acid clay overlying a slightly alkaline silt. The organic matter in both topsoil and subsoil is somewhat below normal, the carbon : nitrogen ratio of the topsoil being wide. The salinity of both topsoil and subsoil is somewhat above the average, with a low theoretical lime requirement.

Sophia—Field 16 E.—Plant Canes.

The results of the three trials harvested in Field 16 E., Sophia, appear in Table V and Figure I.

TABLE V.—**Results of 3 Variety Trials in Field 16 E., Sophia.**

PLANTS, 13.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean
				Experiment A.			
MEAN YIELDS:	T. 1198	31.64	14.56	9.19	89.8	4.62	110.79
	D. 75/30	34.86	12.10	20.91	82.3	4.17	100.00
	P.O.J.2878	30.45	13.50	10.30	86.4	4.10	98.32
	D. 164/30	27.33	13.84	7.95	89.5	3.78	90.65
	Mean:					4.17	100.00
	Standard Error:					—	—
	Significant Difference, 20 : 1:					—	—
				Experiment B.			
MEAN YIELDS:	P.O.J.2878	34.09	14.34	8.34	89.1	4.92	108.85
	D. 7/32	33.29	12.34	11.14	85.6	4.12	91.15
	Mean:					4.52	100.00
	Standard Error:					—	—
	Significant Difference, 20 : 1:					—	—
				Experiment C.			
	D. 113/30	36.34	13.09	7.43	85.9	4.78	111.42
	P.O.J. 2878	32.27	13.43	7.03	86.9	4.33	100.93
MEAN YIELDS:	D. 182/30	30.76	13.69	8.64	87.7	4.22	98.37
	D. 219/30	31.05	13.33	8.63	86.7	4.16	96.97
	D. 147/30	28.14	14.14	7.15	88.5	3.97	92.54
	Mean:					4.29	100.00
	Standard Error:					—	—
	Significant Difference, 20 : 1:					—	—

In Experiment A, T. 1198 (M.P. 55) showed superiority to P.O.J. 2878 in yield of cane, sucrose content, purity and glucose ratio. D. 75/30 (Badila x D. 625) gave a higher yield of cane and slightly more sucrose than the standard but the cane was not as good in quality.

In Experiment B, D. 7/32 (S.C. 12/4) was surpassed by the standard cane in all respects.

In Experiment C, D. 113/30 (D. 238/17 x S.C. 12/4) led the standard by 11 per cent. and D. 182/30 (B. 6835 x D. 625) was close behind the Java cane.

What has been said about the rainfall on Field 14 East is applicable to this Field where the excess amounted to 21 inches.

The topsoil of Field 16 E., Sophia, is an acid clay overlying a subsoil of a similar nature. The organic matter of the topsoil is below the average, and the carbon : nitrogen ratio of both topsoil and subsoil is wide. The salinity of the topsoil is normal while that of the subsoil is below the average. The theoretical lime requirement of the whole is low.

Sophia—Field 17 E.—Plant Canes.

The results from Field 17 E., Sophia, are given in Table VI and Figure I.

TABLE VI.—**Results of a Variety Trial in Field 17 E., Sophia.**

PLANTS, 13.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS:	P.O.J. 2878	28.60	12.80	8.16	87.2	3.65	112.31
	D. 121/33	28.42	12.53	8.92	87.3	3.56	109.54
	T. 1198	24.88	13.99	7.51	89.0	3.48	107.08
	D. 27/33	23.17	13.89	7.40	89.5	3.21	98.77
	D. 102/33	25.75	12.39	14.35	83.4	3.17	97.54
	D. 25/33	21.11	13.76	5.18	90.7	2.90	89.23
	D. 24/33	20.94	13.34	7.32	88.1	2.79	85.85
	Mean :					3.25	100.00
	Standard Error :					—	—
	Significant Difference, 20 : 1 :					—	—

D. 121/33 (D. 666/18 x Diamond 10) was a close second to the standard, with cane of very similar quality. T. 1198 (M.P. 55), which headed the list in Experiment A of Field 16 E., Sophia, was a fairly close third, thanks to its excellent juice.

The total rainfall on this trial amounted to more than 20 inches above the normal but the excesses occurred in the wet seasons and the dry seasons were drier than usual.

The topsoil of Field 17 E., Sophia, is an acid clay overlying a highly alkaline silt subsoil. The organic matter at both depths of soil is low with an average carbon : nitrogen ratio. The salinity of the topsoil is normal while that of the subsoil is below normal. The theoretical lime requirement is low.

Sophia—Field 2 W.—Plant Canes.

The results of the four trials in Field 2 W., Sophia, are presented in Table VII and Figure II.

TABLE VII.—**Results of 4 Variety Trials in Field 2 W., Sophia.**

PLANTS, 13.75 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.
			Experiment A.				
MEAN YIELDS:	P.O.J.2878	33.08	13.62	6.99	88.5	4.52	120.53
	M.P.R. 42	33.43	10.40	9.00	84.8	3.47	92.53
	M.P.R. 7	28.00	11.62	11.88	84.0	3.25	86.67
	Mean:					3.75	100.00
	Standard Error:					0.23	6.13
	Significant Difference, 20 : 1:					0.75	20.00
			Experiment B.				
MEAN YIELDS:	P.O.J.2878	31.40	13.72	5.13	90.0	4.31	127.89
	D. 295/30	26.67	12.01	6.49	88.0	3.21	95.25
	D. 173/30	24.88	12.61	5.71	88.0	3.14	93.17
	D. 113/30	28.95	9.74	17.46	80.4	2.82	83.68
	Mean:					3.37	100.00
	Standard Error:					0.23	6.82
	Significant Difference, 20 : 1:					0.80	23.74
			Experiment C.				
MEAN YIELDS:	P.O.J.2878	33.20	12.11	6.38	86.6	4.01	116.91
	D. 9/28	25.75	10.94	6.41	86.4	2.86	83.38
	Mean:					3.43	100.00
	Standard Error:					0.20	5.83
	Significant Difference, 20 : 1:					0.90	26.24
			Experiment D.				
MEAN YIELDS:	P.O.J.2878	36.79	12.62	8.95	86.4	4.63	108.18
	F.C. 916	36.31	10.82	8.38	85.4	3.93	91.82
	Mean:					4.28	100.00
	Standard Error:					—	—
	Significant Difference, 20 : 1:					—	—

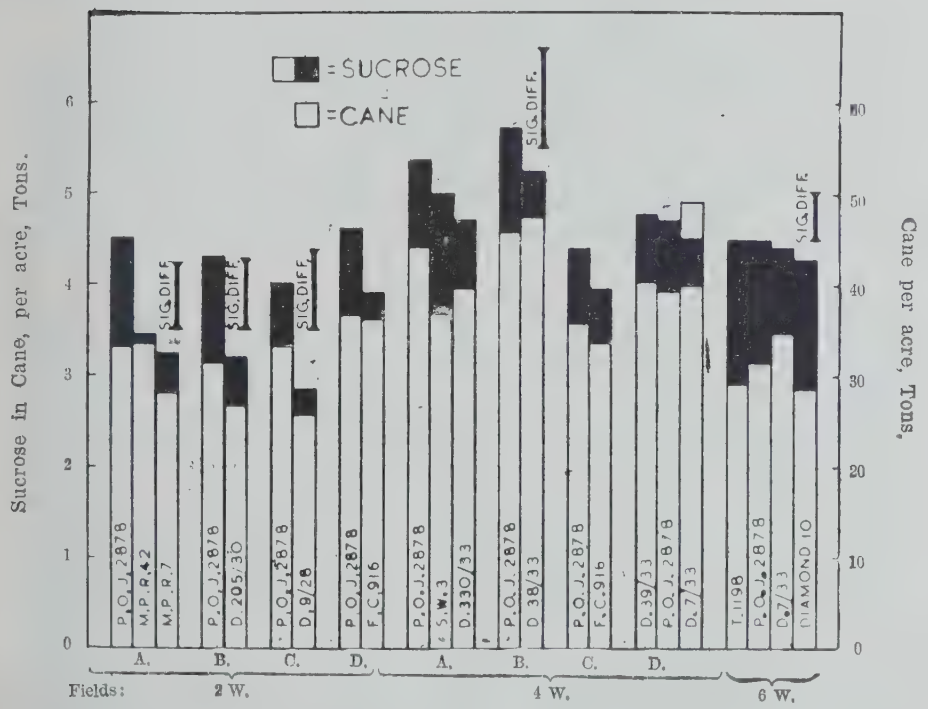
In all the experiments P.O.J. 2878 leads by a wide margin. M.P.R. 7 has shown up well previously and its position in Experiment A is disappointing. The same remark applies to the three Demerara seedlings in Experiment B. D. 9/28 and F. C. 916 will be discarded.

The excess of rainfall on the trials was not as marked as that on most of the other trials from Sophia reported on in this Bulletin, being 15 inches. Precipitation was sub-normal in the critical early months of growth and excessive at the sixth, seventh and eleventh to thirteenth months.

The topsoil of Field 2 W., Sophia, is a markedly acid silt overlying an acid clay subsoil. The organic matter in both topsoil and subsoil is normal with an average carbon : nitrogen ratio, and an average salinity. The theoretical lime requirement is above the average.

FIG. II.

Sucrose and Cane Yields from Plant Canes at Sophia.



Sophia—Field 4 W.—Plant Canes

In Table VIII and Figure II will be found the results of the four trials in Field 4 W., Sophia.

TABLE VIII.—**Results of 4 Variety Trials in Field 4 W., Sophia.**

PLANTS, 15.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.
				Experiment A.			
MEAN YIELDS:	P.O.J. 2878	44.19	12.29	8.51	83.1	5.39	111.13
	S.W. 3	36.79	13.58	6.15	86.1	5.01	103.30
	D. 330/33	39.74	11.88	5.85	83.0	4.73	97.53
	P.O.J. 2753	39.80	10.93	7.15	83.0	4.29	88.45
	Mean:					4.85	100.00
	Standard Error:					...	...
	Significant Difference, 20 : 1:					...	...
				Experiment B.			
MEAN YIELDS:	P.O.J. 2878	45.87	12.55	9.06	86.7	5.74	119.33
	D. 38/33	47.55	11.04	20.51	78.4	5.26	109.36
	D. 42/33	38.09	12.67	12.49	83.9	4.78	99.38
	D. 46/33	45.76	9.79	24.01	75.4	4.46	92.72
	D. 57/33	37.67	10.04	15.79	78.1	3.80	79.00
	Mean:					4.81	100.00
	Standard Error:					0.36	7.48
	Significant Difference, 20 : 1:					1.11	23.08
				Experiment C.			
MEAN YIELDS:	P.O.J. 2878	35.88	12.39	8.14	86.3	4.42	107.80
	F.C. 916	33.74	11.74	7.59	84.3	3.97	96.83
	M.P.R. 42	33.18	11.76	7.68	84.7	3.90	95.12
	Mean:					4.10	100.00
	Standard Error:					...	...
	Significant Difference, 20 : 1:					...	...
				Experiment D.			
	D. 39/33	40.40	11.91	9.43	84.4	4.80	108.60
	P.O.J. 2878	39.35	12.06	7.46	87.0	4.74	107.24
MEAN YIELDS:	D. 7/33	49.44	9.22	20.37	74.0	4.54	102.71
	D. 94/33	47.55	9.06	12.68	75.1	4.27	96.61
	D. 295/33	42.43	8.94	12.93	79.2	3.75	84.84
	Mean:					4.42	100.00
	Standard Error:					...	...
	Significant Difference, 20 : 1:					...	...

P.O.J. 2878 headed the list in Experiments A, B and C. S.W. 3 and P.O.J. 2753 have previously shown some promise but were disappointing here. D. 330/33 (Co. 281 x Diamond 10) was here tested for the first time; neither in cane yield nor sucrose content has it equalled the standard. Also tested for the first time were D. 38/33 (D. 666/18 x Diamond 10) and D. 46/33 (same parentage), which appear to be high tonnage canes of mediocre juice. D. 57/33, F.C. 916 and M.P.R. 42 will be discarded. In Experiment D, all of the seedlings exceeded the standard in yield of cane but only D. 39/33 (D. 666/18 x Diamond 10) yielded a fair juice.

The rainfall distribution on these trials was very similar to that described for Field 2 W., Sophia, save that Field 4 W. was started a month later.

The topsoil of Field 4 W., Sophia, is a highly acid clay over a markedly acid clay subsoil. The organic matter content of both topsoil and subsoil is normal with an average carbon : nitrogen ratio. The salinity of the topsoil is normal but that of the subsoil is high. The theoretical lime requirement is low.

Sophia—Field 6 W.—Plant Canes.

Table IX and Figure 11 present the results from Field 6 W., Sophia.

TABLE IX.—**Results of a Variety Trial in Field 6 W., Sophia.**

PLANTS, 11.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.
MEAN YIELDS:	T. 1198	29.23	15.44	5.12	91.8	4.51	121.89
	P.O.J. 2878	31.48	14.34	5.84	89.3	4.51	121.89
	D. 7/33	34.69	12.81	9.08	88.0	4.43	119.73
	Diamond 10	28.56	15.05	5.47	90.8	4.30	116.22
	F.C. 998	24.94	15.12	5.14	90.5	3.78	102.16
	M.P.R. 49	24.12	14.22	5.69	91.2	3.45	93.24
	M.P.R. 145	24.91	13.56	6.20	89.6	3.39	91.62
	F.C. 916	22.75	14.70	4.71	90.6	3.35	90.54
	M.P.R. 151	23.54	13.27	7.76	88.0	3.13	84.59
	T. 2020	20.35	14.76	3.85	91.5	3.01	81.35
	P.R. 826	21.64	13.06	6.36	89.6	2.83	76.49
	Mean :					3.70	100.00
	Standard Error :					0.19	5.14
	Significant Difference, 20 : 1 :					0.55	14.86

Most of the varieties in this trial appeared, from field observations, to be rapid growers and the main object of the experiment was to ascertain their yields when harvested comparatively early. T. 1198 gave a good cane yield and, as in previous tests, an excellent juice. With a slightly higher cane yield

and not quite as good a juice, P.O.J. 2878 gave the same yield of sucrose per acre as T. 1198. D. 7/33 (D. 53/27 x Diamond 10) gave a high tonnage of cane of mediocre quality, a similar result to that in Experiment D of Field 4 W., Sophia.

An excess of 22.31 inches of rain fell on this Experiment but precip-. itation was low when the cane was four to five months of age.

The topsoil of Field 6 W., Sophia, is an acid clay overlying a slightly alkaline heavy clay subsoil. The organic matter in both topsoil and subsoil is normal with average carbon : nitrogen ratio. The salinity of the topsoil is somewhat higher than normal while that of the subsoil is about the average. The theoretical lime requirement is low.

Sophia—Field 13 W.—Plant Canes.

Table X and Figure III present the results from Field 13 W., Sophia.

TABLE X.—Results of a Variety Trial in Field 13 W., Sophia.

PLANTS, 12.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS :	D. 75/30	29.37	12.30	9.84	84.3	3.60	143.43
	D. 205/30	24.74	13.12	4.13	88.0	3.24	129.08
	D. 235/30	19.83	13.62	5.06	88.4	2.67	106.37
	D. 628/21	20.79	12.97	9.54	84.6	2.64	105.18
	P.O.J.2878	18.50	13.93	4.77	88.9	2.58	102.79
	M.P.R. 42	17.96	13.53	4.15	88.4	2.44	97.21
	D. 309/21	16.98	13.66	6.01	87.2	2.30	91.63
	D. 178/33	15.93	12.90	5.76	86.5	2.07	82.47
	D. 148/33	18.34	10.38	9.49	81.9	1.85	73.71
	D. 169/33	12.88	13.54	6.54	86.0	1.73	68.92
	Mean :					2.51	100.00
	Standard Error :					0.29	11.55
	Significant Difference, 20 : 1 :					0.84	33.47

D. 75/30 (Badila x D. 625) again heads the list, being significantly better than all the canes tested except D. 205/30 (B. 6835 x D. 625). This last has done well before at Sophia and on the estates. The last five canes on the list will be discarded from the experiments.

More than 35 inches of excess rainfall watered the experiment. For the first two months it was drier than usual but the next four months were very heavy and for the three months preceding harvest rains were again abnormally high.

The topsoil of Field 13 W., Sophia is a markedly acid silt overlying an alkaline silt subsoil. The organic matter in the topsoil is somewhat below the average while the organic matter content of the subsoil exceeds that of the topsoil. The carbon : nitrogen ratio of the topsoil is normal but that of the subsoil is wide. The salinity and the theoretical lime requirement of both topsoil and subsoil are normal.

Sophia—Field 16 W.—Plant Canes.

The results from Field 16 W., Sophia, are presented in Table XI and Figure III.

TABLE XI.—**Results of a Variety Trial in Field 16 W., Sophia.**

PLANTS, 12.50 months.

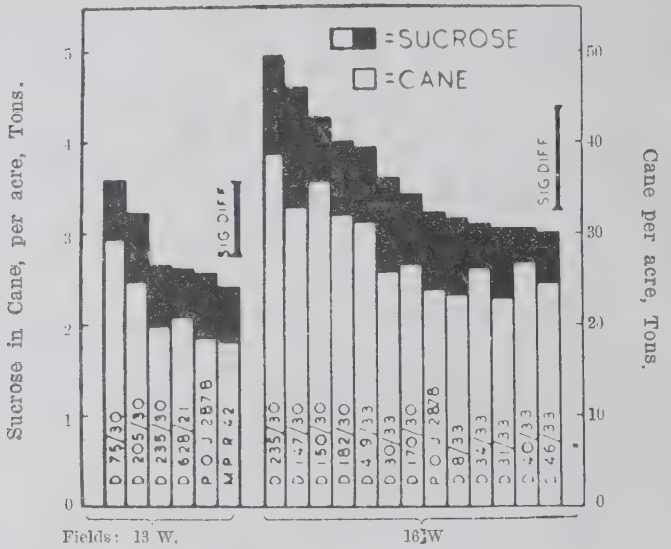
	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS :	D. 235/30	38.72	12.98	9.03	87.3	4.97	141.60
	D. 147/30	32.76	14.08	8.97	85.8	4.62	131.62
	D. 150/30	35.78	12.25	15.24	82.9	4.29	122.22
	D. 182/30	31.96	12.52	8.60	87.3	4.03	114.81
	D. 419/33	31.25	12.75	9.03	85.9	3.96	112.82
	D. 30/33	25.75	14.04	5.14	89.7	3.63	103.42
	D. 170/30	26.63	12.91	6.90	87.2	3.45	98.29
	P.O.J. 2878	23.79	13.68	7.71	86.6	3.25	92.59
	D. 8/33	23.16	13.86	7.24	86.4	3.18	90.60
	D. 34/33	26.17	12.01	11.94	84.5	3.12	88.89
	D. 31/33	22.88	13.34	7.41	88.0	3.07	87.46
	D. 40/33	26.84	11.70	9.30	82.7	3.07	87.46
	D. 46/33	24.46	12.29	14.29	81.8	3.02	86.04
	D. 15/33	25.33	11.54	9.00	82.7	2.92	83.19
	D. 107/33	22.57	13.28	7.75	85.5	2.82	80.34
	D. 39/33	22.88	12.28	8.44	84.0	2.77	78.92
	Mean :					3.51	100.00
	Standard Error :					0.40	11.40
	Significant Difference, 20 : 1 :					1.16	33.05

The first four canes at the head of the list have all done well in previous tests. D. 419/33 (Co. 281 x Diamond 10) and D. 30/33 (S. C. 12/4 x Diamond 10) were tested here for the first time ; they are worthy of further trial. The former gave a good tonnage and fair juice while the latter reflects the excellent juice qualities of its parents.

This experiment had nearly 21 inches of rainfall above the normal. Excesses were, however, in the normally wet seasons, while the dry seasons were unusually dry.

FIG. III.

Sucrose and Cane Yields from Plant Canes at Sophia.



The topsoil of Field 16 W., Sophia, is a markedly acid silt overlying an alkaline silt subsoil. The organic matter in the topsoil is very low while that in the subsoil is normal. The carbon ; nitrogen ratio in the topsoil is very narrow and to some extent that of the subsoil. The salinity of both topsoil and subsoil is low with an average theoretical lime requirement.

PLANT CANE VARIETY TRIALS REAPED IN BERBICE.

Table XII contains a list of the plant cane variety trials reaped in Berbice during the year and particulars as to their layout, etc.

TABLE XII.—**Plant Cane Variety Trials Reaped in Berbice.**

Estate.	Field.	Age of Canes, Months.	Date of		Number of		Type of Layout.
			Planting.	Reaping.	Varieties.	Replicates.	
Port Mourant	7 A.W. A	13.25	12.VIII.36	16.IX.37	4	4	Latin Square.
,,	7 ,, B	13.25	12.VIII.36	16.IX.37	4	4	,,
,,	15 A.O.L.	14.25	22.IX.36	2.XII.37	3	6	Randomised Blocks.
Blairmont	37 Rp.	14.25	4.II.37	12.IV.38	7	5	,,

Port Mourant—Field 7 A. W.—Plant Canes.

Table XIII and Figure IV present the results from the two trials harvested in Field 7 A. W., Port Mourant.

TABLE XIII.—**Results of 2 Variety Trials in Field 7 A.W., Port Mourant.**

PLANTS, 13.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.
			Experiment A.				
MEAN YIELDS:	P.O.J. 2878	56.43	13.37	6.09	86.6	7.33	120.56
	D. 4/28	43.40	13.35	6.07	86.5	5.82	95.72
	D. 50/30	48.29	11.97	8.58	87.5	5.72	94.08
	D. 11/28	47.23	11.33	9.12	85.3	5.47	89.97
	Mean:					6.08	100.00
	Standard Error:					—	—
	Significant Difference, 20 : 1 :					—	—
			Experiment B.				
MEAN YIELDS:	P.O.J. 2878	56.35	13.24	7.00	86.3	7.34	120.72
	D. 49/30	46.83	13.09	6.21	87.6	6.08	100.00
	D. 66/30	47.05	12.06	8.98	84.4	5.68	93.42
	D. 182/30	44.93	11.67	9.10	83.7	5.24	86.18
	Mean:					6.08	100.00
	Standard Error:					—	—
	Significant Difference, 20 : 1 :					—	—

P.O.J. 2878 has led by a wide margin in both tests from canes which have frequently shown their merit in other tests.

Rainfall was below normal for the first four months and again from the sixth to the eighth. It was unusually heavy during the three months preceding the one in which it was harvested.

The topsoil of Field 7 A. W., Port Mourant, is a markedly acid clay overlying a slightly acid clay subsoil. The organic matter in the topsoil is very high and that in the subsoil above the average, with an average carbon : nitrogen ratio in both. The salinity in both topsoil and subsoil is normal, and the theoretical lime requirement is below the average.

Port Mourant—Field 15 A. O. L.—Plant Canes.

The results of the plant cane harvest of Field 15 A.O.L., Port Mourant, are presented in Table XIV and Figure IV.

TABLE XIV.—Results of a Variety Trial in Field 15 A.O.L., Port Mourant.

	PLANTS, 14.25 months.						
	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS:	P.O.J. 2878	45.02	16.66	3.63	89.1	7.48	115.61
	T. 1198	42.93	14.40	5.52	85.7	6.13	94.74
	F.C. 916	38.54	15.03	4.52	86.6	5.79	94.89
	Mean:					6.47	100.00
	Standard Error:					—	—
	Significant Difference, 20 : 1 :					—	—

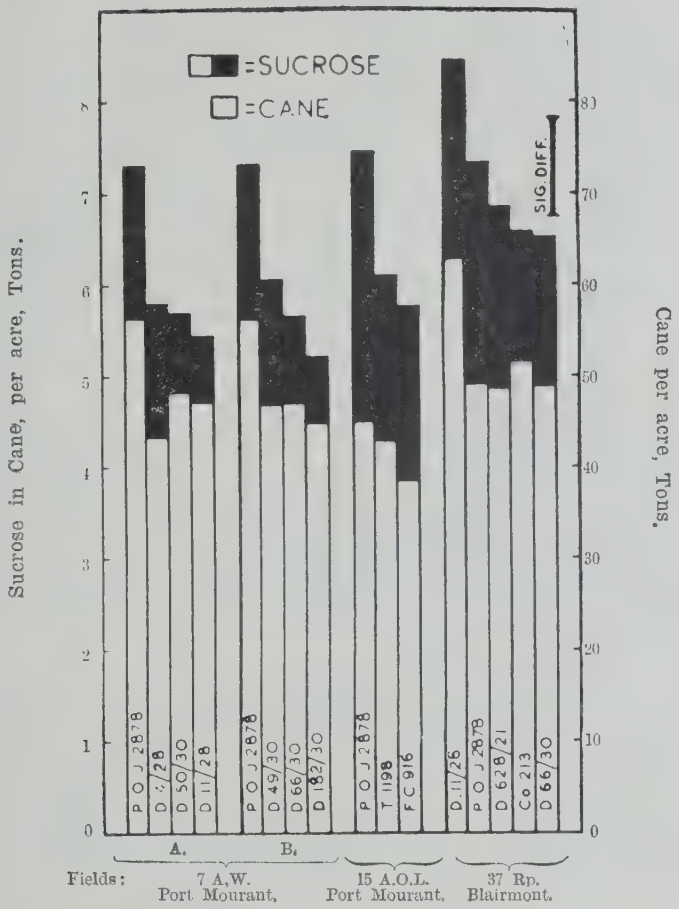
None of the canes tested seems likely to compete with P.O.J. 2878 in this area.

Rainfall on this trial was subnormal for the first two months, high at the third and subnormal again for the next three. After that it was, on the whole, higher than usual except at the twelfth month.

The topsoil of Field 15 A.O.L., Port Mourant, is a highly acid clay overlying an acidic clay. The organic matter in the topsoil is high and that of the subsoil above the average with a normal carbon : nitrogen ratio. The salinity of the topsoil is normal but that of the subsoil is rather high. The theoretical lime requirement is above average in the topsoil and somewhat low in the subsoil.

FIG. IV.

Sucrose and Cane Yields from Plant Canes at Pln. Port Mourant and Pln Blairmont.



Blairmont—Field 37 Rp.—Plant Canes.

Table XV and Figure IV present the results for Field 37 Rp., Blairmont.

TABLE XV.—Results of a Variety Trial in Field 37 Rp., Blairmont.

	PLANTS, 14.25 months.						
	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS:	D. 11/28	62.92	13.43	5.50	89.1	8.46	123.87
	P.O.J. 2878	49.14	15.03	3.97	87.5	7.35	107.61
	D. 628/21	48.65	14.14	5.32	88.9	6.87	100.59
	Co. 213	51.51	12.87	3.66	87.8	6.60	96.63
	D. 66/30	48.91	13.35	4.41	89.9	6.54	95.75
	D. 309/21	47.39	12.66	6.20	87.2	6.00	87.85
	F.C. 916	45.38	13.26	5.67	87.2	5.97	87.41
	Mean :					6.83	100.00
	Standard Error :					0.37	5.42
	Significant Difference, 20 : 1 :					1.08	15.81

D. 11/28 (S. C. 12/4 x D. 625), which proved statistically better than P.O.J. 2878, has already performed well in this area (Field 24 Rp.) and the commercial trial of a few fields is advised. The three canes following P.O.J. 2878 have shown much promise elsewhere and their ratoon results here must be watched. The last two canes on the list will be discarded.

Nearly 29 inches more rain fell on this trial than might have been expected. The excesses occurred mainly in May—July 1937 and January—March 1938. It was particularly dry for the first two months after planting.

The topsoil of Field 37 Rp., Blairmont, is a highly acid pegassy clay with a slightly acid pegassy clay subsoil. The organic matter is somewhat high in both soils with an average carbon : nitrogen ratio. The salinity is normal in the topsoil and subsoil, as is the theoretical lime requirement for this type of soil.

Plant Cane Variety Trials Reaped in East Demerara.

Table XVI contains a list of the plant cane variety trials harvested in East Demerara during the period and particulars as to their layout, etc.

Table XVI.—Plant Cane Variety Trials Reaped in East Demerara.

Estate.	Field.	Age of Canes, Months.	Date of		Number of		Type of Layout.
			Planting.	Reaping.	Varieties.	Replicates.	
Enmore	29 E.W.	14.00	24.II.37	27.IV.38	3	5	Randomised Blocks.
Lusignan	2 G.H.W.	13.00	29.X.36	30.XI.37	7	5	,,
Ogle	45 C.L.	13.50	25.II.37	7.IV.38	3	5	,,
Diamond	93 G.D. A	16.00	8.IV.36	10.VIII.37	4	5	,,
,,	93 ,, B	16.00	8.IV.36	10.VIII.37	3	5	,,
,,	79 G.D.	14.00	16.III.37	16.V.38	5	5	Latin Square.

Enmore—Field 29 E. W.—Plant Canes.

The results from Field 29 E. W., Enmore, are given in Table XVII and Figure V.

Table XVII.—Results of a Variety Trial in Field 29 E.W., Enmore.

Plants, 14.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
Mean Yields:	P.O.J. 2878	42.71	13.30	4.61	87.1	5.69	116.60
	D. 235/30	36.67	13.06	4.63	89.5	4.78	97.95
	D. 2/31	30.60	13.67	4.77	89.2	4.18	85.66
	Mean :					4.88	100.00
	Standard Error :					0.24	4.92
	Significant Difference, 20 : 1 :					0.78	15.98

P.O.J. 2878 proved significantly better than the other varieties tested, and they will be discarded.

Rainfall was unusually low during the dry seasons that these canes were growing and unusually high during the wet. The total excess amounted to 24.62 inches.

The topsoil of Field 29 E. W., Enmore, is a very highly acid pegassy clay overlying a very highly acid pegassy clay subsoil. The organic matter content is normal for this type of soil, as is the carbon : nitrogen ratio. The salinity of the topsoil is normal but that of the subsoil is somewhat higher than normal. The theoretical lime requirement for both topsoil and subsoil is high.

Lusignan—Field 2 G.H.W.—Plant Canes.

Table XVIII and Figure V present the results from Field 2 G.H.W., Lusignan.

TABLE XVIII.—**Results of a Variety Trial in Field 2 G.H.W., Lusignan.**

PLANTS, 13.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS :	P.O.J. 2878	29.59	15.12	7.01	85.5	4.46	116.75
	Diamond 10	26.69	15.79	7.53	84.0	4.22	110.47
	D. 40/33	28.77	13.77	11.16	82.8	3.97	103.93
	D. 9/33	25.49	15.14	7.32	85.4	3.84	100.52
	D. 11/33	29.00	12.54	11.77	80.6	3.65	95.55
	D. 125/33	23.01	15.08	10.15	82.4	3.46	90.58
	D. 38/33	23.70	13.20	14.41	81.2	3.11	81.41
	Mean :					3.82	100.00
	Standard Error :					0.23	6.02
	Significant Difference, 20 : 1 :					0.67	17.54

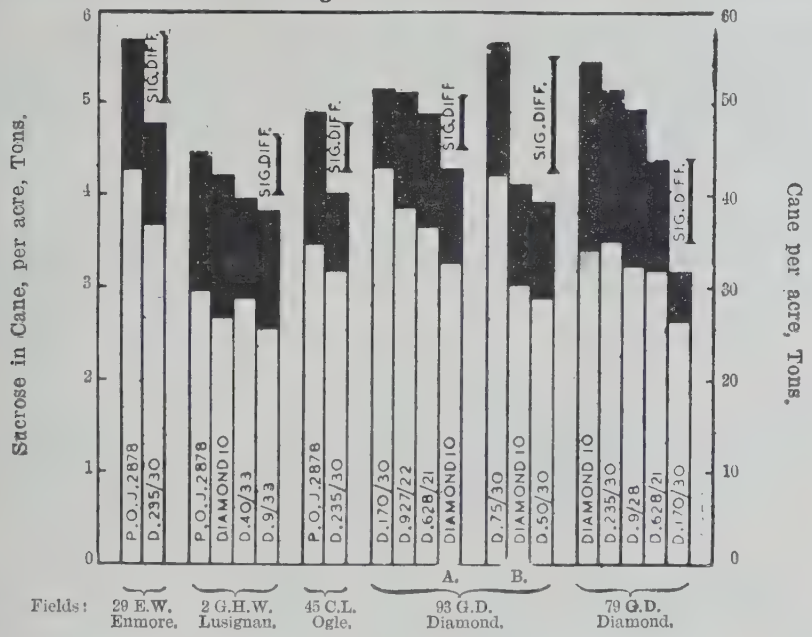
Owing to the unsatisfactory weather, cane yields were somewhat low. P.O.J. 2878 heads the list followed by Diamond 10. D. 40/33 (D. 666/18 x Diamond 10) gave a cane tonnage comparable with the standards but was immature at harvest. It will be tested again, as will also be D. 9/33 (D.53/27 x Diamond 10) which appears to have good juice characteristics.

This trial, in a low-lying field, experienced difficulty with excessive rains just after planting and again from the seventh to the ninth months. On the other hand it suffered a severe drought in February—March 1937.

The topsoil of Field 2 G.H.W., Lusignan, is a highly acid clay over a markedly acid clay subsoil. The organic matter in the topsoil is normal but that in the subsoil is somewhat above the average. The carbon : nitrogen ratio of the topsoil is normal, but that of the subsoil wide. The salinity of the topsoil is normal, that of the subsoil somewhat higher than the average. The theoretical lime requirement of the topsoil is above the average, that of the subsoil normal.

FIG. V.

Sucrose and Cane Yields from Plant Canes at Pln. Enmore, Pln, Lusignan, Pln. Ogle and Pln. Diamond.



Ogle—Field 45 C.L.—Plant Canes

Table XIX and Figure V show the results obtained from Field 45 C.L., Ogle.

TABLE XIX.—**Results of a Variety Trial in Field 45 C.L., Ogle.**

PLANTS, 13.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.
MEAN YIELDS:	P.O.J. 2878	34.58	14.28	4.65	88.7	4.91	120.94
	D. 235/30	31.77	12.67	6.45	87.1	4.03	99.26
	D. 2/31	23.46	13.82	4.63	88.6	3.24	79.80
	Mean:					4.06	100.00
	Standard Error:					0.17	4.19
	Significant Difference, 20 : 1:					0.55	13.55

P.O.J. 2878 was significantly better than the other two varieties which will be discarded.

Except for the first two and the seventh to tenth months, rains were abnormally high on this field and a marked total excess over the average was recorded.

The topsoil of Field 45 C.L., Ogle, is a markedly acid clay, the subsoil being an alkaline clay. The organic matter in the topsoil is normal but that in the subsoil low. The carbon : nitrogen ratio is normal for both topsoil and subsoil and the salinity is also normal at both depths. The theoretical lime requirement is low.

Diamond—Field 93 G.D. Plant Canes.

The results from the two trials harvested in Field 93 G.D., Diamond, are presented in Table XX and Figure V.

TABLE XX.—**Results of 2 Variety Trials in Field 93 G.D., Diamond.**

PLANTS, 16.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
			Experiment A.				
MEAN YIELDS:	D. 170/30	43.03	12.01	9.59	86.5	5.16	105.95
	D. 927/22	38.63	13.29	7.23	90.0	5.13	105.34
	D. 628/21	36.46	13.47	6.04	88.3	4.89	100.41
	Diamond 10	32.60	13.19	5.02	90.9	4.30	88.30
	Mean :					4.87	100.00
	Standard Error :					0.19	3.90
	Significant Difference, 20 : 1 :					0.59	12.11
			Experiment B.				
MEAN YIELDS:	D. 75/30	42.16	13.40	8.43	89.6	5.67	123.80
	Diamond 10	30.32	13.69	6.17	89.7	4.13	90.17
	D. 50/30	28.94	13.46	6.94	90.3	3.94	86.03
	Mean :					4.58	100.00
	Standard Error :					0.39	8.52
	Significant Difference, 20 : 1 :					1.27	27.73

All three varieties at the head of the list in Experiment A proved statistically superior to Diamond 10. D. 927/22 (D. 4399) has previously outyielded the Diamond seedling in this area (Field 89 G.D.) and the establishment of a couple of fields for commercial tests is advised.

D. 75/30 (Badila x D. 625), which heads the list in Experiment B, has many good results to its credit and the nurseries established on the estate should certainly be extended.

The total rainfall recorded during the growth of this field was 11 inches above the normal. After the first month, however, there were four months of subnormal precipitation and two more again after the sixth. The ninth and tenth months were abnormally wet but were followed by a drought. Rains were again excessive just before harvest.

The topsoil of Field 93 G. D., Diamond, is a very highly acid pegassy clay over an extremely acid clay subsoil. The organic matter is fairly high in both topsoil and subsoil with wide carbon : nitrogen ratios. The salinity in both topsoil and subsoil is low, but the theoretical lime requirement for the soil at both depths is high.

Diamond—Field 79 G.D.—Plant Canes.

Table XXI and Figure V present the results from Field 79 G.D., Diamond.

TABLE XXI.—**Results of a Variety Trial in Field 79 G.D., Diamond.**

PLANTS, 14.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS:	Diamond 10	34.05	16.03	3.80	93.2	5.46	117.93
	D. 235/30	35.00	14.69	4.65	90.9	5.16	111.45
	D. 9/28	32.41	15.30	4.78	91.2	4.96	107.13
	D. 628/21	31.91	13.88	10.10	86.4	4.40	95.03
	D. 170/30	26.45	12.08	7.67	85.3	3.19	68.90
	Mean :					4.63	100.00
	Standard Error :					0.30	6.48
	Significant Difference, 20 : 1 :					0.92	19.87

Diamond 10 heads the list but is followed fairly closely by D. 235/30 (S.C. 12/4) which has done well in other trials before. Despite heavy rains for several months before harvest, the juices of the first three canes were remarkably good. In other experiments, D. 9/28 (S.C. 12/4 x D. 625) has given some promise as a ratooner.

It was unusually dry for the first two months after this trial was planted and again at the ninth and tenth months, but for the rest of the growing period rains were above the normal and, on several occasions, excessive.

Plant Cane Variety Trials Reaped in West Demerara.

Table XXII lists the plant cane variety trials harvested in West Demerara during the year.

TABLE XXII.—**Plant Cane Variety Trials Reaped in West Demerara.**

Estate.	Field.	Age of Canes, Months.	Date of		Number of		Type of Layout.
			Planting.	Reaping.	Varieties.	Replicates.	
Wales	3 Y.R.	12.50	18.III.37	5.IV.38	3	5	Randomised Blocks
Uitvlugt	71 M.Z.	13.75	7.X.36	25.XI.37	9	5	"

Wales—Field 3 Y.R.—Plant Canes.

The results of the test in Field 3 Y.R., Wales, are presented in Table XXIII and Figure VI.

TABLE XXIII.—**Results of a Variety Trial in Field 3 Y.R., Wales.**

PLANTS, 12.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS:	P.O.J. 2878	43.77	14.50	4.90	88.5	6.33	117.01
	D. 628/21	44.26	12.37	15.11	79.5	5.49	101.48
	D. 2/31	31.85	13.81	5.10	87.5	4.40	81.33
	Mean :					5.41	100.00
	Standard Error :					0.21	3.88
	Significant Difference, 20 : 1 :					0.68	12.57

Thanks to its superior juice, P.O.J. 2878 has led D. 628/21 (D. 625) by a significant margin. D. 2/31 will be discarded. Yields were satisfactory and the juices good, except in the case of D. 628/21 which was immature.

This field was too heavily watered during its third to fifth and last three months of growth, but experienced dry weather at the start and a prolonged droughty period in the Autumn of 1937.

The topsoil of Field 3 Y.R., Wales, is a highly acid clay overlying a very highly acid clay subsoil. The organic matter in both topsoil and subsoil is above the average, the carbon : nitrogen ratios being normal. The salinity in both topsoil and subsoil is very low, but the theoretical lime requirements are high.

Uitvlugt—Field 71 M.Z.—Plant Canes.

The results of the experiment in Field 71 M.Z., Uitvlugt, are presented in Table XXIV and Figure VI.

TABLE XXIV.—**Results of a Variety Trial in Field 71 M.Z., Uitvlugt.**

PLANTS, 13.75 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,	
						Tons.	% Mean.
MEAN YIELDS:	D. 24/33	36.18	12.27	12.29	85.7	4.45	117.11
	D. 173/30	35.71	12.49	10.84	85.7	4.44	116.84
	D. 164/30	31.33	13.18	6.78	89.5	4.12	108.42
	D. 205/30	38.84	10.13	15.39	81.3	3.92	103.16
	Diamond 10	33.34	11.51	13.48	83.7	3.82	100.53
	D. 167/30	33.64	11.00	13.83	84.1	3.71	97.63
	D. 113/30	30.40	11.53	9.88	86.5	3.48	91.58
	D. 7/33	36.82	9.35	28.91	74.1	3.43	90.26
	D. 46/33	28.09	10.23	25.53	76.3	2.86	75.26
	Mean:					3.80	100.00
	Standard Error:					0.18	4.74
	Significant Difference, 20 : 1 :					0.52	13.68

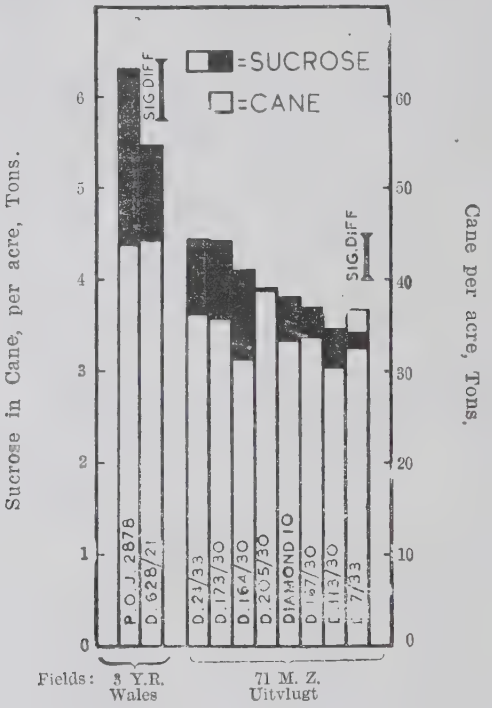
D. 24/33 (S.C. 12/4 x Diamond 10) heads the list with a yield significantly better than that of Diamond 10 and a satisfactory juice. The other canes which lead the standard have done well in previous experiments. D. 7/33 (D. 53/27 x Diamond 10) gave a heavy yield of cane but poor juice.

These canes had two months of dry weather, two of excessive rains and two of dry weather again. The next four months were well watered but it was drier than usual from then until harvest.

The topsoil of Field 71 M.Z., Uitvlugt, is a very highly acid clay with a subsoil of similar nature. The topsoil and subsoil have average contents of organic matter with an average carbon : nitrogen ratio. The salinity in both topsoil and subsoil is very low but the theoretical lime requirements are high.

FIG. VI.

Sucrose and Cane Yields from Plant Canes at Pln. Wales and Pln. Uitvlugt.



SUB-SECTION B.—FIRST RATOON VARIETY TRIALS.

First Ratoon Variety Trials Reaped at Sophia Sugar Experiment Station.

Details of the reaping dates, layout, etc., of the first ratoon variety trials reaped at the Sophia Sugar Experiment Station are recorded in Table XXV.

TABLE XXV.—**First Ratoon Variety Trials Reaped at Sophia Experiment Station**

Field.	Age of Canes, Months.	Date of		Number of		Type of Layout.
		Previous Reaping.	Reaping.	Varieties.	Replicates.	
1 East A	11.50	23.III.37	7.III.38	2	5	Randomised Blocks.
1 „ B	11.50	23.III.37	7.III.38	3	5	„
1 „ C	11.50	23.III.37	7.III.38	3	5	„
1 „ D	11.50	23.III.37	7.III.38	2	5	„
2 „	12.50	10.IX.36	28.IX.37	7	6	„
5 „ A	15.50	30.IV.36	12.VIII.37	2	5	„
5 „ C	15.50	30.IV.36	12.VIII.37	2	5	„
5 „ E	15.50	30.IV.36	12.VIII.37	2	5	„
8 „ A	12.25	10.XI.36	17.XI.37	3	7	„
8 „ B	12.25	10.XI.36	17.XI.37	3	7	„
9 „ A	11.50	9.XII.36	26.XI.37	4	5	„
9 „ B	11.50	9.XII.36	26.XI.37	4	5	„
10 „ A	11.50	17.III.37	4.III.38	5	7	„
3 West	12.00	21.IX.36	24.IX.37	2	8	„
15 „	13.00	4.IX.36	7.X.37	3	6	„

Sophia—Field 1 E.—First Ratoons.

The results of the four tests in Field 1 E., Sophia, are presented in Table XXVI and Figure VII.

TABLE XXVI.—**Results of 4 Variety Trials in Field 1 E., Sophia.**

1ST RATOONS, 11.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined Results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.
				Experiment A.					
MEAN YIELDS:	P.O.J. 2878	35.74	12.12	6.63	85.9	4.32	114.59	P.O.J. 2878	8.79
	D. 50/30	25.68	12.46	6.07	87.0	3.22	85.41	D. 50/30	6.94
	Mean:					3.77	100.00		
	Standard Error:					...	...		
	Significant Difference, 20: 1:					...	...		
				Experiment B.					
MEAN YIELDS:	P.O.J. 2878	31.71	10.63	8.88	82.6	3.40	114.48	P.O.J. 2878	6.85
	M.P.R. 7	29.75	10.26	10.53	80.5	3.04	102.36	M.P.R. 7	6.72
	M.P.R. 42	21.83	11.31	5.42	86.2	2.46	82.83	M.P.R. 42	5.57
	Mean:					2.97	100.00		
	Standard Error:					...	...		
	Significant Difference, 20: 1:					...	...		
				Experiment C.					
MEAN YIELDS:	P.O.J. 2878	31.99	10.83	7.93	83.1	3.40	110.75	S.W. 3	7.49
	S.W. 3	26.17	12.44	4.43	87.8	3.30	107.49	P.O.J. 2878	7.10
	F.C. 916	24.74	10.18	9.90	81.7	2.52	82.08	F.C. 916	6.12
	Mean:					3.07	100.00		
	Standard Error:					...	...		
	Significant Difference, 20: 1:					...	...		
				Experiment D.					
MEAN YIELDS:	P.O.J. 2878	30.76	12.44	5.13	84.8	3.84	109.09	P.O.J. 2878	6.41
	D. 182/30	28.38	11.29	7.71	83.9	3.21	91.19	D. 182/30	5.86
	Mean:					3.52	100.00		
	Standard Error:					...	...		
	Significant Difference, 20: 1:					...	...		

(*Plant cane results reported in Sugar Bull. No. 6, p. 3.*)

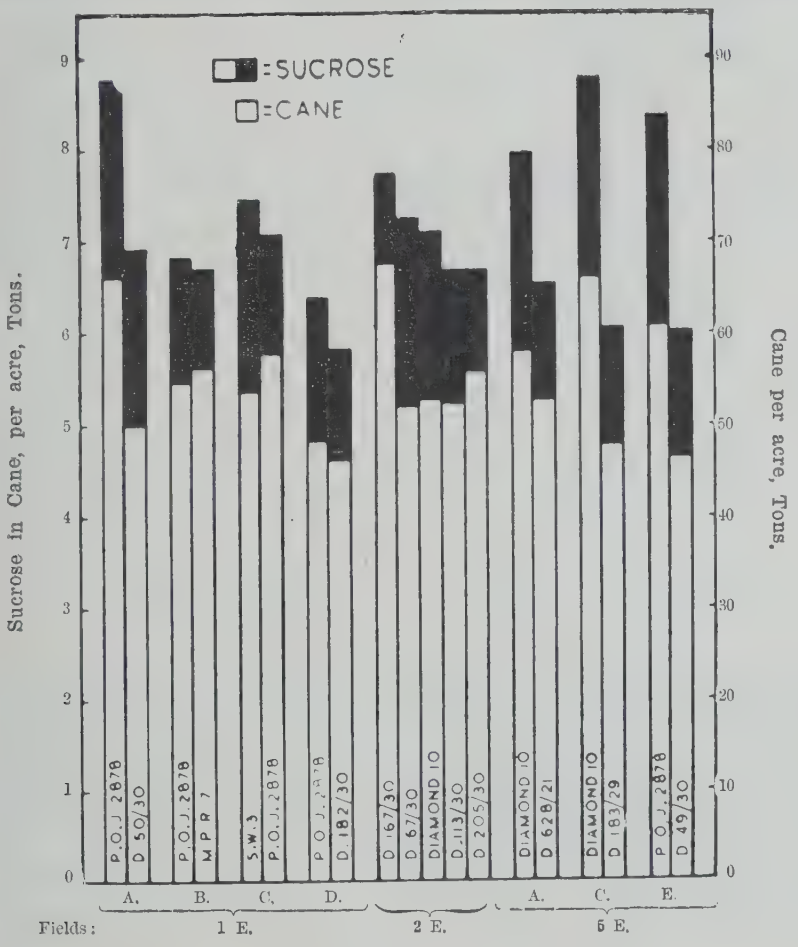
In Experiment A, D. 50/30 (D. 625 x S.C. 12/4) was severely outyielded by P.O.J. 2878, though its juice was somewhat better than that of the standard cane.

In Experiment B, there was nothing to choose between M.P.R. 7 (P.O.J. 2725 x S.C. 12/4) and P.O.J. 2878 which was somewhat riper than the former at harvest. M.P.R. 42 (P.O.J. 2725 x S.C. 12/4) will be discarded.

In Experiment C, S.W. 3 (Z. Cheribon x Batjan) was just ahead of P.O.J. 2878 in the total yield for two crops. F.C. 916 (P.O.J. 2725 x S.C. 12/4) will be discarded.

FIG. VII.

Sucrose and Cane Yields from Plant Canes and First Ratoons at Sophia.



In Experiment D, P.O.J. 2878 surpassed D. 182/30 (B. 6835 x D. 625) by a wide margin.

These experiments received more rain than might normally be expected. It was very dry just after the harvest of the plant canes, but the third to the fifth and the eleventh and twelfth months were much wetter than usual, and probably too wet.

The slightly acidic clay of Field 1 E., Sophia, was discussed on p. 5 of *Sugar Bulletin* No. 6.

Sophia—Field 2 E.—First Ratoons.

The results secured from the trial in Field 2 E., Sophia, are shown in Table XXVII and Figure VII.

TABLE XXVII.—**Results of a Variety Trial in Field 2 E., Sophia.**

1ST RATOONS, 12.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
	Diamond 10	21.02	14.28	5.85	90.4	3.01	121.37	D. 167/30	7.76
	D. 167/30	22.86	12.29	9.48	86.5	2.83	114.11	D. 67/30	7.28
MEAN	D. 67/30	17.69	14.71	4.53	91.4	2.62	105.65	Diamond 10	7.13
YIELDS:	D. 113/30	17.17	13.86	5.07	91.4	2.37	95.56	D. 113/30	6.71
	D. 205/30	17.26	13.28	7.31	89.6	2.28	91.94	D. 205/30	6.71
	D. 164/30	16.12	13.91	6.23	89.5	2.25	90.73	D. 173/30	6.57
	D. 173/30	15.45	12.78	6.60	87.7	1.98	79.84	D. 164/30	6.40
	Mean:					2.48	100.00		
	Standard Error					0.22	8.87		
	Significant Difference, 20: 1					0.64	25.81		

(*Plant cane results reported in Sugar Bull. No. 6, p. 5.*)

Diamond 10 came top as a first ratoon, but in the total yield for two crops it is surpassed by D. 167/30 (D. 145) and D. 67/30 (Diamond 10 x S.C. 12/4). Juices were good at harvest, especially those of Diamond 10 and D. 67/30.

This field had over 20 inches more rain than the normal but the excesses were in the wet seasons while the dry seasons were drier than usual.

The markedly acidic clay of Field 2 E., Sophia, was described on p. 6 of *Sugar Bulletin* No. 6.

Sophia—Field 5 E.—First Ratoons.

Data from the three trials in Field 5 E., Sophia, are given in Table XXVIII and Figure VII.

TABLE XXVIII.—**Results of 3 Variety Trials in Field 5 E., Sophia.**

1ST RATOONS, 15.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
				Experiment A.					
MEAN YIELDS:	Diamond 10	27.15	13.81	5.76	89.6	3.79	114.85	Diamond 10	7.98
	D. 628/21	23.05	12.22	10.20	85.5	2.81	85.15	D. 628/21	6.56
	Mean:					3.30	100.00		
	Standard Error					...	...		
	Significant Difference, 20: 1:					...	...		
				Experiment C.					
MEAN YIELDS:	Diamond 10	31.78	13.02	6.09	87.7	4.12	132.05	Diamond 10	8.80
	D. 183/29	18.53	11.36	7.45	85.9	2.12	67.95	D. 183/29	6.08
	Mean:					3.12	100.00		
	Standard Error:					0.13	4.17		
	Significant Difference, 20: 1:					0.51	16.35		
				Experiment E.					
MEAN YIELDS:	P.O.J. 2878	27.44	13.51	6.07	87.8	3.70	120.91	P.O.J. 2878	8.39
	D. 49/30	19.10	12.77	6.40	86.9	2.43	79.41	D. 49/30	6.04
	Mean:					3.06	100.00		
	Standard Error					0.08	2.61		
	Significant Difference, 20: 1:					0.31	10.13		

(*Plant cane results reported in Sugar Bull. No. 5. p. 5.*)

D. 628/21 (D. 625), D. 183/29 (D. 625 x B.H. 10/12) and D. 49/30. (D. 625) were all much surpassed in these trials by the standard with which they were being compared. Purities were satisfactory and glucose ratios were low except in the case of D. 628/21.

During its long growth this field had a total of 18 inches more than might have been expected. Much of this excess, however, occurred in the last few months of growth, while the critical fourth to seventh months were unusually dry.

The markedly acidic clay of Field 5 E., Sophia, was discussed on p. 9 of *Sugar Bulletin* No. 5.

Sophia—Field 8 E.—First Ratoons.

The results of the two experiments harvested in Field 8 E., Sophia, are recorded in Table XXIX and Figure VIII.

TABLE XXIX.—**Results of 2 Variety Trials in Field 8 E., Sophia.**

1st Ratoons, 12.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre Tons.
				Experiment A.					
Mean Yields:	Diamond 10	28.11	13.15	7.87	85.2	3.69	119.03	Diamond 10	7.85
	D. 205/30	22.67	12.70	7.33	85.6	2.85	91.94	D. 205/30	7.26
	D. 235/30	21.92	12.51	7.78	84.9	2.75	88.71	D. 235/30	6.99
	Mean:					3.10	100.00		
	Standard Error:					0.14	4.52		
	Significant Difference, 20: 1:					0.43	13.87		
				Experiment B.					
Mean Yields:	Diamond 10	26.30	14.13	8.75	87.2	3.71	111.41	Diamond 10	8.43
	Co. 213	29.48	12.41	8.68	84.8	3.65	109.61	Co. 213	8.24
	T. 1198	20.10	13.06	6.84	85.5	2.63	78.98	T. 1198	7.38
	Mean:					3.33	100.00		
	Standard Error:					0.11	3.30		
	Significant Difference 20: 1:					0.34	10.21		

(*Plant cane results reported in Sugar Bull. No. 6, p. 7.*)

None of the canes tried exceeded the standard, but Co. 213, which has a good local record, was not far behind Diamond 10 in Experiment B.

Rainfall on these trials was 23 inches above the normal. The excesses occurred in the wet seasons, however, and the fourth and fifth months of growth were very dry.

The markedly acidic heavy slit of Field 8 E., Sophia, was described on p. 8 of *Sugar Bulletin* No. 6.

Sophia—Field 9 E.—First Ratoons.

Table XXX and Figure VIII present results from two trials harvested in Field 9 E., Sophia.

TABLE XXX.—**Results of 2 Variety Trials in Field 9 E., Sophia.**

1ST RATOONS, 11.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined Results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.
				Experiment A.					
MEAN YIELDS:	P.O.J. 2878	36.16	12.74	8.04	86.4	4.62	114.36	P.O.J. 2878	10.14
	D. 628/21	38.37	11.09	14.71	80.1	4.27	105.69	D. 182/30	9.03
	D. 182/30	33.01	11.16	10.88	83.8	3.69	91.34	D. 628/21	8.41
	D. 4/28	29.19	12.12	10.74	85.6	3.59	88.86	D. 4/28	8.29
	Mean:					4.04	100.00		
	Standard Error:					...	...		
	Significant Difference, 20: 1:					...	...		
				Experiment B.					
MEAN YIELDS:	D. 11/32	38.11	11.38	12.03	80.3	4.33	110.18	P.O.J. 2878	10.11
	P.O.J. 2878	36.42	11.67	8.42	83.8	4.27	108.65	D. 2/31	9.04
	D. 2/31	31.80	12.00	7.16	85.1	3.84	97.71	D. 11/32	8.80
	D. 1/31	28.86	11.51	8.55	83.9	3.30	83.97	D. 1/31	7.48
	Mean:					3.93	100.00		
	Standard Error:					...	...		
	Significant Difference, 20: 1:					...	...		

(*Plant cane results reported in Sugar Bull. No. 6, p. 9.*)

None of the canes tested was able to approach P.O.J. 2878 in the yield for two crops.

These tests had 22 inches excess of rain over the normal. Two very heavy months followed the harvest of the plant canes and the sixth to eighth months of growth were probably too wet. On the other hand it was dry for the third and fourth months and again just before reaping.

The markedly acidic heavy silt of Field 9 E., Sophia, was discussed on p. 10 of *Sugar Bulletin* No. 6.

Sophia—Field 10 E.—First Ratoons.

The results of the single experiment harvested in Field 10 E., Sophia, appear in Table XXXI and Figure VIII.

TABLE XXXI.—**Results of a Variety Trial in Field 10 E., Sophia.**

1ST RATOONS, 11.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane Per Acre.		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per acre, Tons.
MEAN YIELDS:	P.O.J. 2878	30.11	12.27	4.87	86.8	3.68	109.85	P.O.J. 2878	10.10
	P.O.J. 2727	34.64	10.20	8.13	81.5	3.55	105.97	D. 309/21	8.65
	D. 49/30	30.61	10.84	6.01	85.2	3.33	99.40	P.O.J. 2727	8.39
	D. 309/21	28.38	11.20	6.33	83.8	3.17	94.63	D. 49/30	8.03
	D. 167/30	32.41	9.44	11.32	79.0	3.04	90.75	D. 167/30	7.33
	Mean:					3.35	100.00		
	Standard Error:					—	—		
	Significant Difference, 20 : 1:					—	—		

(*Plant cane results reported in Sugar Bull. No. 6, p. 11.*)

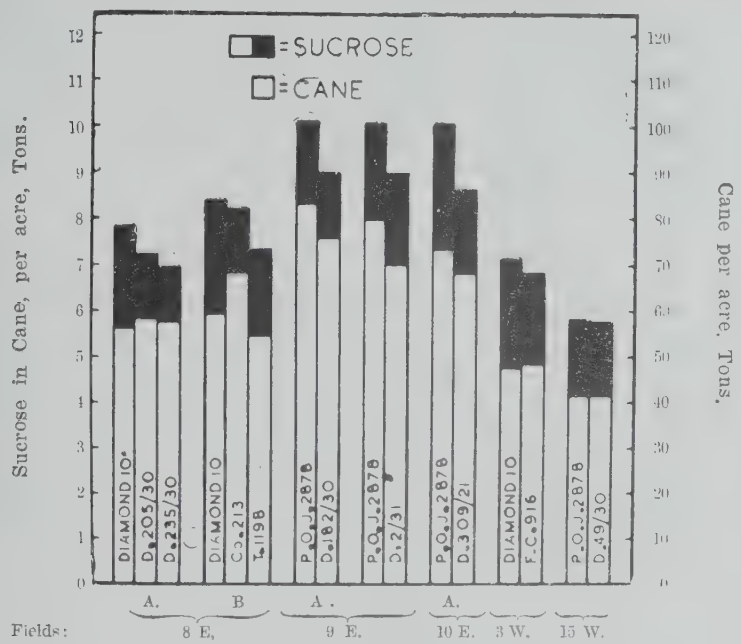
P.O.J. 2878 proved superior to all the other varieties tested.

This experiment experienced the same weather conditions as described for Field 1 East, Sophia.

The markedly acidic clay of Field 10 E., Sophia, has been described on p. 12 of *Sugar Bulletin* No. 6.

FIG. VIII.

Sucrose and Cane Yields from Plant Canes and First Ratoons at Sophia.



Sophia—Field 3 W.—First Ratoons.

Table XXXII and Figure VIII show the results obtained from Field 3 W., Sophia.

TABLE XXXII.—**Results of a Variety Trial in Field 3 W., Sophia.**

1ST RATOONS, 12.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	Diamond 10	19.80	14.43	5.07	90.8	2.86	104.00	Diamond 10	7.17
	F.C. 916	18.75	14.17	4.25	91.1	2.65	96.36	F.C. 916	6.86
	Mean:					2.75	100.00		
	Standard Error:					...	...		
	Significant Difference, 20 : 1:					...	...		

(*Plant cane results reported in Sugar Bull. No. 6, p. 13.*)

Diamond 10 came out well ahead of the Puerto Rican F.C. 916 (P.O.J. 2725 x S.C. 12/4).

Twentytwo inches of rain above the normal fell on this field, the excesses being marked for the third and fourth and eighth to tenth months of growth. The first two months after the harvest of the plant canes were somewhat dry, and the fifth and sixth months very dry.

On p. 13 of *Sugar Bulletin* No. 6 will be found a description of the highly acidic clay of Field 3 W., Sophia.

Sophia—Field 15 W.—First Ratoons.

The results from Field 15 W., Sophia, are presented in Table XXXIII and Figure VIII.

TABLE XXXIII.—**Results of a Variety Trial in Field 15 W., Sophia.**

1ST RATOONS, 13.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	P.O.J. 2878	20.29	13.83	3.20	90.2	2.81	108.49	P.O.J. 2878	5.85
	D. 49/30	18.98	14.48	3.89	91.3	2.74	105.79	D. 49/30	5.80
	D. 9/28	16.70	13.34	4.12	89.0	2.22	85.71	D. 9/28	4.32
	Mean:					2.59	100.00		
	Standard Error:					0.12	4.63		
	Significant Difference, 20: 1:					0.38	14.67		

(*Plant cane results reported in Sugar Bull. No. 6, p. 14.*)

D. 49/30 (D. 625), which has given a good account of itself elsewhere, was a close second to P.O.J. 2878, but D. 9/28 (S.C. 12/4 x D. 625) was a poor third. Juices were very good, especially that of D. 49/30.

The weather conditions affecting this trial are the same as those already discussed under Field 17 East, Sophia.

The markedly acidic fine silt of Field 15 W., Sophia, was discussed on p. 14 of *Sugar Bulletin* No. 6.

First Ratoon Variety Trials Reaped in Berbice.

Two first ratoon variety trials were reaped in Berbice during the year. Particulars as to their layout, etc., are given in Table XXXIV.

TABLE XXXIV.—**First Ratoon Variety Trials Reaped in Berbice.**

Estate.	Field.	Age of Canes, Months.	Date of		Number of		Type of Layout.
			Previous Reaping.	Reaping.	Varieties.	Replicates.	
Albion	49 A.	11.50	7.IV.37	25.III.38	5	1	Randomised Blocks
Providence	14 E.W.	12.50	23.IX.36	6.X.37	4	5	,,

Albion—Field 49 A.—First Ratoons.

The first ratoon results from Field 49 A., Albion, are shown in Table XXXV and Figure IX.

TABLE XXXV.—**Results of a Variety Trial in Field 49 A., Albion.**

1ST RATOONS, 11.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre.		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per acre, Tons.
MEAN YIELDS:	P.O.J. 2878	43.11	13.26	3.86	86.9	5.72	124.89	D. 75/30	11.31
	D. 75/30	44.13	11.78	11.67	82.5	5.20	113.54	P.O.J. 2878	11.11
	D. 66/30	34.04	13.56	3.64	90.1	4.61	100.65	D. 66/30	8.51
	D. 11/28	34.89	12.60	4.95	87.9	4.40	96.07	D. 11/28	7.95
	D. 170/30	25.68	11.64	5.24	84.0	2.99	65.28	D. 170/30	5.16
	Mean:					4.58	100.00		
	Standard Error:					—	—		
	Significant Difference, 20:1:					—	—		

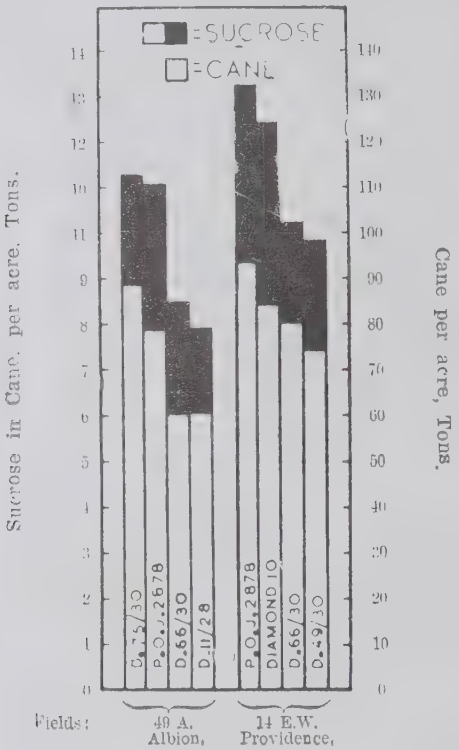
(*Plant cane results reported in Sugar Bull. No. 6, p. 15.*).

D. 75/30 (Badila x D. 625), which led by a wide margin in the plants, gave an excellent tonnage as a first ratoon, but its juice was not as good as that of P.O.J. 2878. In the combined results for two crops, however, it is still slightly ahead of the standard cane. Several other good results are reported from D. 75/30 in this Bulletin.

The rain on this trial amounted to more than 46 inches above the normal, all months but three showing excesses.

FIG. IX.

Sucrose and Cane Yields from Plant Canes and First Ratoons at Pln. Albion and Pln. Providence, (Berbice).



Providence (Berbice)—Field 14 E.W.—First Ratoons.

The results of the experiment in Field 14 E.W., Providence, are presented in Table XXXVI and Figure IX.

TABLE XXXVI.—**Results of a Variety Trial in Field 14 E.W., Providence (Berbice).**

1ST RATOONS, 12.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre.		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS :	P.O.J. 2878	35.95	14.11	7.30	87.1	5.07	106.96	P.O.J. 2878	13.28
	Diamond 10	32.38	15.14	5.96	89.6	4.90	103.38	Diamond 10	12.47
	D. 49/30	34.90	13.60	5.17	89.0	4.74	100.00	D. 66/30	10.26
	D. 66/30.	32.55	13.0)	4.90	88.4	4.24	89.45	D. 49/30	9.86
	Mean:					4.74	100.00		
	Standard Error:					...	...		
	Significant Difference, 20: 1:					...	...		

(*Plant cane results reported in Sugar Bull. No. 6, p. 17.*)

P.O.J. 2878 is well ahead of Diamond 10 in the total yield for two crops. D. 49/30 (D. 625) ratooned well but its juice was inferior in sucrose content to those of the standard canes.

Rainfall tended to be low on this trial for most of its growth, the dry seasons being more marked than usual. Some excesses were, however, registered in the wet seasons.

The highly acidic clay soil of Field 14 E.W., Providence, was described on p. 17 of *Sugar Bulletin* No. 6.

First Ratoon Variety Trials Reaped in East Demerara.

Particulars of the layout, etc., of the six first ratoon variety trials reaped in East Demerara during the period are given in Table XXXVII.

Table XXXVII.—**First Ratoon Variety Trials Reaped in East Demerara.**

Estate.	Field.	Age of Canes, Months.	Date of Previous Reaping.	Date of Reaping.	Number of Varieties.	Number of Replicates.	Type of Layout.
Cane Grove	50 S.M. A	12.50	9.IV.37	22.IV.38	2	5	Randomised Blocks.
"	50 " B	12.50	9.IV.37	22.IV.38	3	5	"
Enmore	13 H. A	10.50	20.IV.37	8.III.38	4	5	"
"	13 " B	10.50	20.IV.37	8.III.38	2	5	"
Lusignan	76 A.	10.75	28.VIII.36	21.VII.37	5	7	"
La Bonne Intention	45 M.W.	11.00	2.IX.36	4.VIII.37	4	7	"
Ogle	109 E.	11.75	1.X.36	23.IX.37	4	7	"
Diamond	97 G.D.	11.75	23.XI.36	16.XI.37	6	7	"

Cane Grove—Field 50 S.M.—First Ratoons

The results of the two trials harvested in Field 50 S.M., Cane Grove, are presented in Table XXXVIII and Figure X.

Table XXXVIII.—**Results of 2 Variety Trials in Field 50 S.M., Cane Grove.**

1st Ratoons, 12.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined Results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.
				Experiment A.					
Mean Yields:	P.O.J. 2878	22.00	12.97	5.74	88.0	2.86	106.32	D. 1/31	6.87
	D. 1/31	21.44	11.69	6.08	87.1	2.52	93.68	P.O.J. 2878	6.55
	Mean:					2.69	100.00		
	Standard Error:					—	—		
	Significant Difference, 20 : 1:					—	—		
				Experiment B.					
Mean Yields:	P.O.J. 2878	22.78	12.97	5.80	87.0	2.93	107.33	P.O.J. 2878	7.34
	D. 147/30	21.51	12.89	9.74	86.0	2.77	101.47	D. 628/21	7.12
	D. 628/21	21.10	11.63	10.65	83.0	2.48	90.84	D. 147/30	7.10
	Mean:					2.73	100.00		
	Standard Error:					—	—		
	Significant Difference, 20 : 1:					—	—		

(*Plant cane results reported in Sugar Bull. No. 6, p. 18.*)

D. 1/31 (S.C. 12/4 x D. 625.), which headed the plant canes in Experiment A, has been outyielded by P.O.J. 2878 as a first ratoon but leads the standard in total yield for two crops.

In Experiment B, P.O.J. 2878 has outyielded all competitors with D. 628/21 a fairly close second.

The total rainfall on these trials was markedly in excess of the normal, especially from the second to the fourth months, and the last four months before harvest.

The highly acidic pegassy clay of Field 50 S.M., Cane Grove, was described on p. 19 of *Sugar Bulletin* No. 6.

Enmore—Field 13 H.—First Ratoons.

The results of the two trials harvested in Field 13 H., Enmore, are given in Table XXXIX and Figure X.

TABLE XXXIX.—**Results of 2 Variety Trials in Field 13 H., Enmore.**

1ST RATOONS, 10.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 2 Crops, Plants and 1st Ratoons. Variety.	Sucrose in Cane per acre, Tons.
				Experiment A.					
MEAN YIELDS:	D. 150/30	30.47	13.34	7.33	86.5	4.09	125.08	D. 150/30	7.47
	Diamond 10	26.24	13.22	5.03	86.9	3.48	106.42	Diamond 10	6.71
	D. 147/30	21.49	12.96	7.32	86.1	2.78	85.02	D. 170/30	6.04
	D. 170/30	26.79	10.26	5.46	85.9	2.74	83.79	D. 147/30	5.95
	Mean:					3.27	100.00		
	Standard Error:					0.24	7.34		
	Significant Difference, 20: 1:					0.74	22.63		
				Experiment B.					
MEAN YIELDS:	Diamond 10	30.85	13.97	4.93	87.7	4.31	102.62	D. 927/22	8.00
	D. 927/22	35.34	11.63	6.65	86.5	4.10	97.62	Diamond 10	7.62
	Mean:					4.20	100.00		
	Standard Error:					...	..		
	Significant Difference, 20: 1:					...	...		

(*Plant cane results reported in Sugar Bull. No. 6, p. 20.*)

In Experiment A, D. 150/30 (D. 625 x S.C. 12/4), which has several other promising results to its credit, has led Diamond 10 by a fair margin.

In Experiment B, D. 927/22 (D. 4399), which has given high yields on another field on this estate, led Diamond 10 in cane tonnage but was inferior as regards quality of cane. However, in the total yield for two crops it is still ahead of the standard cane.

Fourteen more inches of rain fell on this field than might have been expected but the excesses occurred in the wet seasons and the dry seasons were drier than usual.

The markedly acidic clay of Field 13 H., Enmore, was described on p. 21 of *Sugar Bulletin* No. 6.

Lusignan—Field 76 A.—First Ratoons.

Table XL and Figure X show the results of the test harvested in Field 76 A., Lusignan.

TABLE XL.—**Results of a Variety Trial in Field 76 A., Lusignan.**

1st RATOONS, 10.75 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	Co. 213	38.92	12.04	5.04	86.2	4.69	110.09	Co. 213	12.55
	D. 49/30	33.83	12.92	4.84	89.1	4.38	102.82	Diamond 10	11.12
	Diamond 10	32.95	12.73	6.38	87.9	4.19	98.36	D. 49/30	10.50
	D. 66/30	33.66	12.30	5.69	88.3	4.13	96.95	D. 173/30	10.17
	D. 173/30	29.91	13.10	6.62	88.5	3.91	91.78	D. 66/30	9.96
	Mean:					4.26	100.00		
	Standard Error:					0.17	3.99		
	Significant Difference, 20: 1:					0.50	11.74		

(*Plant cane results reported in Sugar Bull. No 6, p. 21.*)

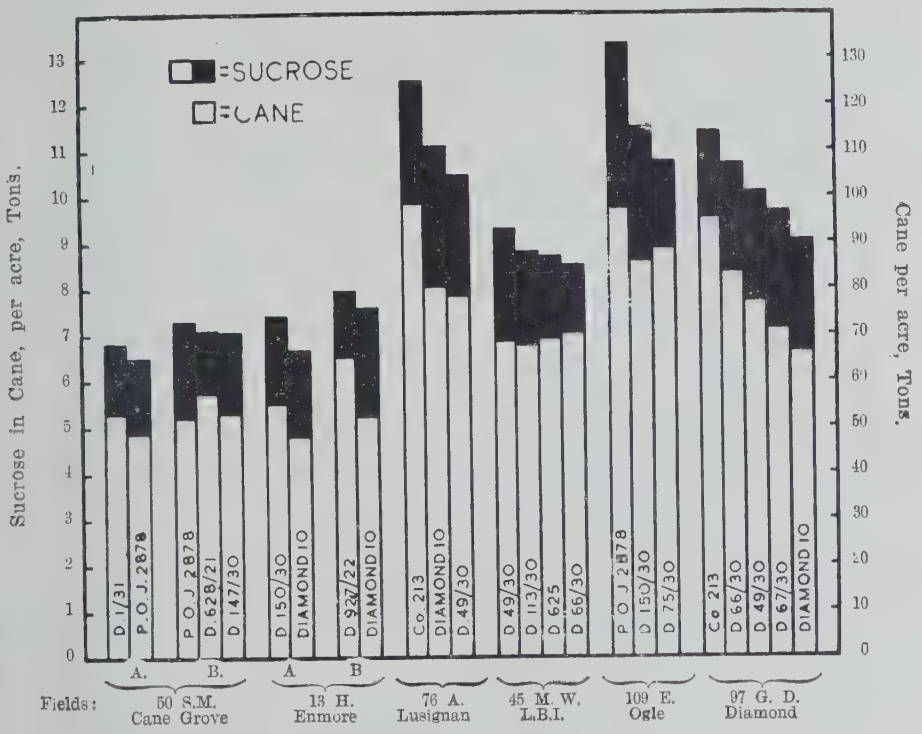
Co. 213 (P.O.J. 213 x Kansar), which led in the plants, was again top, and, in the results for two crops, is well ahead of Diamond 10. D. 49/30 (D. 625) moved slightly ahead of Diamond 10 as a first ratoon but is still behind it in the total yield for two crops.

Rainfall conditions were fairly satisfactory for the first three months of growth but precipitation was excessive during the next two. Then followed a droughty period for three months and, next, three unusually heavy months.

The highly acidic clay of Field 76 A., Lusignan, was described on p. 21 of *Sugar Bulletin* No. 6.

FIG. X.

Sucrose and Cane Yields from Plant Canes and First Ratoons, at Pln. Cane Grove, Pln. Enmore, Pln. Lusignan, Pln. La Bonne Intention, Pln. Ogle and Pln. Diamond.



La Bonne Intention—Field 45 M. W.—First Ratoons.

The data from the experiment in Field 45 M.W., La Bonne Intention, are presented in Table XLI and Figure X.

TABLE XLI.—**Results of a Variety Trial in Field 45 M.W., La Bonne Intention.**

1ST RATOONS, 11.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	D. 49/30	28.91	12.60	4.78	88.0	3.65	109.61	D. 49/30	9.32
	D. 66/30	30.18	11.68	5.89	86.3	3.53	106.01	D. 113/30	8.85
	D. 625	26.61	12.43	8.97	86.6	3.31	99.40	D. 625	8.73
	D. 113/30	23.36	12.19	5.96	86.5	2.84	85.29	D. 66/30	8.57
	Mean:						100.00		
	Standard Error:					0.14	4.20		
	Significant Difference, 20: 1:					0.42	12.61		

(Plant cane results reported in Sugar Bull. No. 6, p. 22.)

D. 49/30 (D. 625) heads the list for first ratoons and total yield over two crops, leading D. 625 by a wide margin. D. 113/30 (D.238/17 x S.C.12/4) did well as a plant but ratooned unsatisfactorily.

More rain than normal fell on this trial in the two wet seasons but for most of its growth the precipitation was subnormal.

On p. 22 of *Sugar Bulletin* No. 6 will be found a description of the markedly acidic clay soil of Field 45 M.W., La Bonne Intention.

Ogle—Field 109 E.—First Ratoons.

Table XLII and Figure X present the results of the trial in Field 109 E., Ogle.

TABLE XLII.—**Results of a Variety Trial in Field 109 E., Ogle.**

1ST RATOONS, 11.75 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	P.O.J. 2878	44.16	14.04	5.61	88.7	6.17	117.75	P.O.J. 2878	13.32
	D. 150/30	38.69	14.27	8.80	86.9	5.51	105.15	D. 150/30	11.53
	D. 75/30	41.88	12.82	9.69	85.9	5.38	102.67	D. 75/30	10.79
	D. 927/22	35.04	11.25	8.71	84.2	3.90	74.43	D. 927/22	9.25
	Mean:					5.24	100.00		
	Standard Error:					0.22	4.20		
	Significant Difference, 20: 1:					0.65	12.40		

(*Plant cane results reported in Sugar Bull. No. 6, p. 24.*)

P.O.J. 2878 heads the list for the first ratoons and that for the two crops D. 150/30 (D. 625 x S.C.12/4) being a rather poor second.

Heavy excesses of rainfall were recorded in December-January (1936-37) but for two months prior and three after, precipitation was sub normal. It was again abnormally high in the five months prior to harvest.

The markedly acidic fine silt of Field 109 E., Ogle, was described on p. 24 of *Sugar Bulletin* No. 6.

Diamond—Field 97 G.D.—First Ratoons.

The data from the experiment in Field 97 G.D., Diamond, are presented in Table XLIII and Figure X.

TABLE XLIII.— **Results of a Variety Trial in Field 97 G.D., Diamond.**

1ST RATOONS, 11.75 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre.		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	Co. 213	51.03	11.88	11.79	83.3	6.09	129.85	Co. 213	11.43
	D. 49/30	37.95	13.24	8.37	87.8	5.03	107.25	D. 66/30	10.76
	D. 66/30	36.93	13.23	8.56	89.4	4.88	104.05	D. 49/30	10.11
	D. 67/30	33.66	14.02	10.69	88.7	4.71	100.43	D. 67/30	9.71
	Diamond 10	31.99	13.99	10.64	87.0	4.42	94.24	Diamond 10	9.08
	D. 309/21	21.41	14.18	8.83	89.2	3.02	64.39	D. 309/21	6.45
	Mean:					4.69	100.00		
	Standard Error:					0.24	5.12		
	Significant Difference, 20 : 1:					0.69	14.71		

(*Plant cane results reported in Sugar Bull. No. 6, p. 25.*)

Co. 213 (P.O.J. 213 x Kansar) was significantly better than any other cane in the trial and leads by a wide margin in the combined results for two crops, D. 66/30 (Diamond 10 x S.C.12/4) and D. 49/30 (D. 625) are also well ahead of Diamond 10. Glucose ratios were somewhat high, especially in the case of Co. 213, D. 67/30 and Diamond 10.

Rains were excessive for two months after the previous harvest and subnormal for the next three. They were again excessive during the mid-year wet season but tended towards normal in the last four months of growth.

The highly acidic pegassy clay of Field 97 G.D., Diamond, was described on p. 25 of *Sugar Bulletin* No. 6.

First Ratoon Variety Trials Reaped in West Demerara.

Table XLIV lists the first ratoon variety trials harvested in West Demerara and particulars as to their layout, etc.

TABLE XLIV.—**First Ratoon Variety Trials Reaped in West Demerara.**

Estate.	Field.	Age of Canes, Months.	Date of		Number of		Type of Layout.
			Previous Reaping.	Reaping.	Varieties.	Replicates.	
Wales	39 V. A	11.00	8.IV.37	9.III.38	4	5	Randomised Blocks.
,,	39 V. B	11.00	8.IV.37	9.III.38	3	5	,,
Uitvlugt	46 deW.	12.50	16.II.37	1.III.38	3	7	,,
,,	13 E.	12.00	14.IV.37	14.IV.38	2	5	,,
Leonora	16 Gv.	12.00	30.IX.36	1.X.37	5	7	,,
,,	53 Sv. A	12.25	15.IV.37	21.IV.38	3	5	,,
,,	53 Sv. B	12.25	15.IV.37	21.IV.38	5	5	Latin Square.

Wales—Field 39 V.—First Ratoons.

The results of the two trials in Field 39 V., Wales, are presented in Table XLV and Figure XI.

TABLE XLV.—**Results of 2 Variety Trials in Field 39 V., Wales.**

1st Ratoons, 11.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per acre, Tons.
				Experiment A.					
Mean Yields:	D. 628/21	22.75	11.61	13.05	80.0	2.64	110.00	D. 628/21	5.29
	P.O.J. 2878	19.84	13.20	8.61	86.1	2.63	109.58	D. 927/22	5.08
	D. 66/30	17.76	13.03	7.70	88.5	2.37	98.75	D. 66/30	5.04
	D. 927/22	18.49	10.65	12.71	80.1	1.97	82.08	P.O.J. 2878	4.36
	Mean:					2.40	100.00		
	Standard Error:					...	...		
	Significant Difference, 20:1:					...	...		
				Experiment B.					
Mean Yields:	P.O.J. 2878	24.23	14.40	7.09	87.6	3.45	121.05	P.O.J. 2878	6.69
	Co. 213	25.95	11.66	7.69	85.5	3.00	105.26	Co. 213	6.62
	M.P.R. 42	16.96	12.35	7.68	87.3	2.10	73.68	M.P.R. 42	5.16
	Mean:					2.85	100.00		
	Standard Error:					0.18	6.32		
	Significant Difference, 20: 1:					0.59	20.70		

(*Plant cane results reported in Sugar Bull. No. 6, p. 26.*)

The yields were somewhat low and, at 11 months of age, D. 628/21 and D. 927/22 were immature.

In Experiment A, all the varieties lead the standard cane in total yield for two crops by important margins.

In Experiment B, P.O.J. 2878 and Co. 213 have yielded the same over two crops. M.P.R. 42 will be discarded.

Twenty six more inches of rain fell on this field than might have been expected. The excesses, however, occurred in the wet season which followed the harvest of the plants, and just before the first ratoons were reaped. Precipitation was low during the middle period of growth.

The highly acidic clay of Field 39 V., Wales, has been described on p. 27 of *Sugar Bulletin* No. 6.

Leonora—Field 16 Gv.—First Ratoons.

Table XLVI and Figure XI give the results of the test harvested in Field 16 Gv., Leonora.

TABLE XLVI.—**Results of a Variety Trial in Field 16 Gv., Leonora.**

1ST RATOONS, 12.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
	D. 49/30	37.69	13.48	5.21	88.0	5.09	115.95	D. 49/30	12.79
MEAN	Diamond 10	33.06	14.47	6.27	87.3	4.80	109.34	Diamond 10	12.73
YIELDS:	D. 164/30	32.34	13.16	6.91	87.8	4.26	97.04	D. 164/30	12.51
	T. 1198	30.09	13.20	6.57	86.2	3.97	90.43	T. 1198	10.66
	D. 927/22	31.47	12.14	7.75	85.0	3.82	87.02	D. 927/22	9.53
	Mean:					4.39	100.00		
	Standard Error:					0.20	4.56		
	Significant Difference, 20: 1:					0.58	13.21		

(*Plant cane results reported in Sugar Bull. No. 6, p. 27.*)

D. 49/30 (D.625) heads the list as a first ratoon and in total yield for two crops, closely followed by Diamond 10 which leads D. 164/30 (D. 145) by a somewhat wider margin. All the canes appear to have been mature at harvest.

The fifth, sixth and last months of growth of these canes were very dry but for the remainder of the period the rainfall was satisfactory to excessive.

On p. 29 of *Sugar Bulletin* No. 6 will be found a description of the markedly acidic heavy silt of Field 16 Gv., Leonora.

Leonora—Field 53 Sv.—First Ratoons.

Table XLVII and Figure XI present the results of the two trials in Field 53 Sv., Leonora.

TABLE XLVII.—**Results of 2 Variety Trials in Field 53 Sv., Leonora.**

1ST RATOONS, 12.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre.		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre Tons.
				Experiment A.					
MEAN YIELDS:	D. 75/30	33.88	13.80	7.39	86.1	4.66	110.17	D. 75/30	9.57
	Diamond 10	25.27	16.08	4.17	90.5	4.07	96.22	Diamond 10	7.82
	D. 1/31	28.70	13.78	5.76	87.9	3.97	93.85	D. 1/31	7.51
	Mean:					4.23	100.00		
	Standard Error:					—	—		
	Significant Difference, 20: 1					—	—		
				Experiment B.					
MEAN YIELDS:	P.O.J. 2878	25.44	16.66	4.60	90.5	4.24	112.77	P.O.J. 2878	8.59
	D. 628/21	27.47	14.23	8.29	85.8	3.93	104.52	Diamond 10	7.87
	Diamond 10	24.14	15.66	4.82	90.4	3.80	101.06	D. 628/21	7.36
	D. 11/28	25.54	13.38	7.71	87.4	3.42	90.96	D. 66/30	6.75
	D. 66/30	23.20	14.62	6.42	88.4	3.39	90.16	D. 11/28	6.65
	Mean:					3.76	100.00		
	Standard Error:					—	—		
	Significant Difference, 20: 1:					—	—		

(*Plant cane results reported in Sugar Bull. No. 6, p. 29.*)

In Experiment A, D. 75/30 (Badila x D. 625) which topped the plants, leads again in the first ratoons and is well ahead of the standard, Diamond 10, in total yield for two crops. Its position is due to its high yield of cane for its juice is not as good as that of the Diamond 10.

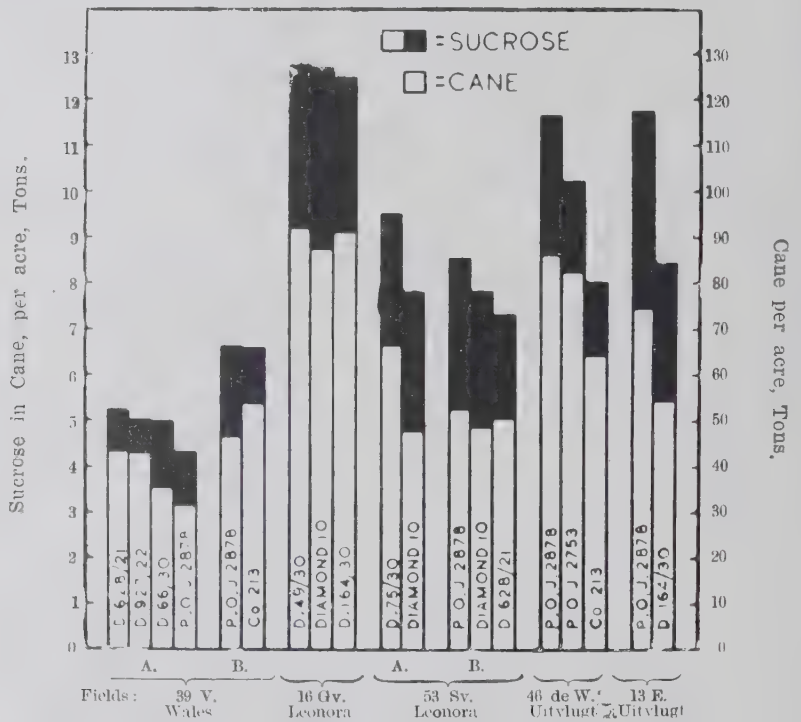
In Experiment B, P.O.J. 2878 has outyielded all competitors. D. 628/21 (D. 625) gave a good yield of cane but its juice was only average as compared with the excellent quality of both the P.O.J. 2878 and Diamond 10. D. 66/30 (Diamond 10 x S.C. 12/4) was very disappointing.

Apart from two very dry months (September—October, 1937), this field had enough or excess rainfall during most of its growth. The excess totalled 27.69 inches.

The highly acidic heavy silt of Field 53 Sv., Leonora, has been described on p. 30 of *Sugar Bulletin* No. 6.

FIG. XI.

Sucrose and Cane Yields from Plant Canes and First Ratoons, at Pln. Wales, Pln. Leonora and Pln. Uitvlugt.



Uitvlugt—Field 46 deW.—First Ratoons.

Table XLVIII and Figure XI present the results from Field 46 deW., Uitvlugt.

TABLE XLVIII.—**Results of a Variety Trial in Field 46 de W., Uitvlugt.**

1ST RATOONS, 12.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per acre, Tons.
MEAN YIELDS:	P.O.J. 2878	40.52	12.94	6.68	87.1	5.24	120.18	P.O.J. 2878	11.70
	P.O.J. 2753	38.23	12.10	6.34	86.4	4.65	106.65	P.O.J. 2753	10.28
	Co. 213	27.34	11.63	6.01	85.8	3.19	73.17	Co. 213	8.08
	Mean:					4.36	100.00		
	Standard Error:					0.24	5.50		
	Significant Difference, 20:1:					0.74	16.97		

(*Plant cane results reported in Sugar Bull. No. 6, p. 31.*)

P.O.J. 2878 leads the other two varieties by a wide margin. Co. 213 has been very disappointing here.

The first two months after the previous harvest were dry. Then the mid-year rainy season was wetter than usual and the Autumn dry season drier than normal. Just before harvest there were excessive rains.

The highly acidic pegassy clay of Field 46 deW., Uitvlugt, was discussed on p. 31 of *Sugar Bulletin* No. 6.

Uitvlugt—Field 13 E.—First Ratoons.

Table XLIX and Figure XI show the results secured from Field 13 E., Uitvlugt.

TABLE XLIX.—**Results of a Variety Trial in Field 13 E., Uitvlugt.**

1ST RATOONS, 12.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 2 Crops, Plants and 1st Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	P.O.J. 2878	34.75	15.60	3.74	90.7	5.42	116.56	P.O.J. 2878	11.79
	D. 164/30	24.59	15.77	3.52	90.8	3.88	83.44	D. 164/30	8.49
	Mean:					4.65	100.00		
	Standard Error:					0.20	4.30		
	Significant Difference, 20: 1:					0.79	16.99		

(*Plant cane results reported in Sugar Bull. No. 6, p. 32.*)

D. 164/30 has been definitely outyielded by P.O.J. 2878.

Rainfall was heavier than usual for the first four months; then followed five months of low precipitation. The last few months before harvest were unusually wet.

On p. 32 of *Sugar Bulletin* No. 6 will be found a description of the highly acidic heavy silt of Field 13 E., Uitvlugt.

SUB-SECTION.—SECOND RATOON VARIETY TRIALS.

Second Ratoon Variety Trials Reaped at Sophia.

Table L lists the second ratoon experiments harvested at Sophia during the year.

TABLE L.—**Second Ratoon Variety Trials Reaped at Sophia Experiment Station.**

Field.	Age of Canes, Months.	Date of		Number of		Type of Layout.
		Previous Reaping.	ping.	Varieties.	Repli-cates.	
3 East B	12.50	15.IX.36	30.IX.37	3	5	Randomised Blocks.
5 West	11.75	23.XI.36	15.XI.37	3	5	"
7 "	12.25	18.XI.36	22.XI.37	5	5	"
8 "	12.25	19.XI.36	23.XI.37	3	5	"
9 "	12.00	25.XI.36	24.XI.37	2	9	"

Sophia—Field 3 E.—Second Ratoons.

The data secured from Field 3 E., Sophia, are presented in Table LI and Figure XII.

TABLE LI.—**Results of a Variety Trial in Field 3 E., Sophia.**

2ND RATOONS, 12.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
			Experiment B.						
MEAN YIELDS:	D. 625	23.16	13.21	6.83	88.3	3.07	103.02	D. 178/29	13.02
	D. 178/29	21.37	14.33	4.29	90.0	3.06	102.68	D. 69/29	12.24
	D. 69/29	22.99	12.22	6.34	83.3	2.80	93.96	D. 625	12.21
	Mean:					2.98	100.00		
	Standard Error:					...	...		
	Significant Difference, 20: 1:					...	...		

(*Plant cane results reported in Sugar Bull. No. 5, p. 3.*)

(*First ratoon results reported in Sugar Bull. No. 6, p. 33.*)

D. 625 was slightly ahead of D. 178/29 (D. 625 x B.H. 10/12) as a second ratoon, but the latter leads by a wide margin in total yield for three crops. D. 178/29 showed excellent juice qualities.

Field 3 East experienced the same weather conditions as those described under Field 17 East, Sophia.

The markedly acidic heavy silt of Field 3 E., Sophia, was discussed on p. 5 of *Sugar Bulletin* No. 5.

Sophia—Field 5 W.—Second Ratoons.

The results of the test in Field 5 W., Sophia, are recorded in Table LII and Figure XII.

TABLE LII.—**Results of a Variety Trial in Field 5 W., Sophia.**

2ND RATOONS, 11.75 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	Diamond 10	31.48	13.53	9.19	87.4	4.20	110.53	Diamond 10	15.20
	P.O.J. 2878	25.94	13.99	6.89	88.0	3.63	95.53	P.O.J. 2878	14.98
	D. 625	29.70	12.09	14.59	81.0	3.58	94.21	D. 625	14.37
	Mean:					3.80	100.00		
	Standard Error:					...	..		
	Significant Difference, 20: 1:					...	...		

(*Plant cane results reported in Sugar Bull. No 5, p. 9.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 34.*)

This is one of the few experiments where Diamond 10 has outyielded P.O.J. 2878 over three crops. D. 625 showed its usual unsatisfactory juice.

The weather conditions affecting these canes were identical with those described under Field 9 East, Sophia.

The slightly acidic clay of Field 5 W., Sophia has been described on p. 10 of *Sugar Bulletin* No. 5.

Sophia—Field 7 W.—Second Ratoons.

The results from Field 7 W., Sophia, are presented in Table LIII and Figure XII.

TABLE LIII.—**Results of a Variety Trial in Field 7 W., Sophia.**

2ND RATOONS, 12.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	P.O.J. 2878	23.15	13.60	6.72	87.6	3.15	111.70	P.O.J. 2878	11.55
	T. 1198	19.63	14.30	7.14	88.0	2.82	100.00	D. 9/28	11.24
	D. 66/30	23.18	12.27	6.04	87.3	2.76	97.87	D. 66/30	10.88
	D. 11/28	22.29	12.28	9.83	85.2	2.74	97.16	D. 11/28	10.45
	D. 9/28	19.71	13.26	6.97	88.1	2.63	93.26	T. 1198	10.31
	Mean:					2.82	100.00		
	Standard Error					...	...		
	Significant Difference, 20: 1:					...	...		

(*Plant cane results reported in Sugar Bull. No. 5, p. 11.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 36.*)

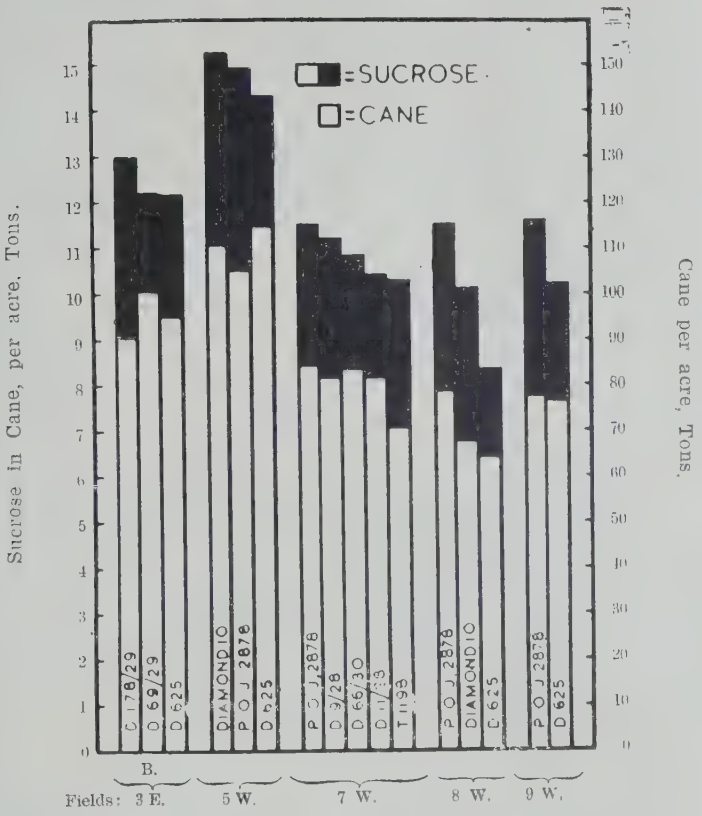
P.O.J. 2878 heads the second ratoon list and that for three crops. It is, however, followed fairly closely by D. 9/28 (S.C.12/4 x D. 625). T. 1198 (M.P. 55) has yielded good juices several times but its cane yield is somewhat low. D. 66/30 (Diamond 10 x S.C. 12/4) was disappointing as regards sucrose content.

These canes experienced the same weather conditions as did those of Field 9 East, Sophia, described previously.

On p. 12 of *Sugar Bulletin* No. 5 will be found a description of the slightly acidic heavy silt of Field 7 W., Sophia.

FIG. XII.

Sucrose and Cane Yields from Plant Canes, First and Second Ratoons at Sophia.



Sophia—Field 8 W.—Second Ratoons.

Table LIV and Figure XII present the results secured from Field 8 W., Sophia.

TABLE LIV.—**Results of a Variety Trial in Field 8 W., Sophia.**

2ND RATOONS, 12.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	P.O.J. 2878	21.52	14.35	6.22	87.7	3.11	146.70	P.O.J. 2878	11.57
	Diamond 10	13.90	14.43	5.77	88.8	2.00	94.34	Diamond 10	10.14
	D. 625	10.14	12.36	9.28	84.8	1.25	58.96	D. 625	8.39
	Mean					2.12	100.00		
	Standard Error					0.18	8.49		
	Significant Difference, 20 : 1 :					0.59	27.83		

(*Plant cane results reported in Sugar Bull. No. 5, p. 12.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 37.*)

P.O.J. 2878 has topped Diamond 10 by a wide and statistically significant margin and D. 625 was significantly poorer than Diamond 10.

The canes experienced the same weather conditions as described for Field 9 East, Sophia.

The alkaline heavy silt of Field 8 W., Sophia, was described on p. 13 of *Sugar Bulletin* No. 5.

Sophia—Field 9 W.—Second Ratoons.

The results from Field 9 W., Sophia, are given in Table LV and Figure XII.

TABLE LV.—**Results of a Variety Trial in Field 9 W., Sophia.**

2ND RATOONS, 12.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	P.O.J. 2878	22.54	14.77	6.75	89.1	3.34	118.02	P.O.J. 2878	11.63
	D. 625	17.37	13.35	11.85	84.3	2.32	81.98	D. 625	10.27
	Mean:					2.83	100.00		
	Standard Error:					0.19	6.71		
	Significant Difference, 20 : 1:					0.62	21.91		

(*Plant cane results reported in Sugar Bull. No. 5, p. 13.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 38.*)

P.O.J. 2878 was significantly better than D. 625 as a second ratoon and led it by a wide margin in total yield for three crops.

This test experienced the same rainfall conditions as described under Field 9 East.

On p. 14 of *Sugar Bulletin* No. 5. will be found a description of the slightly acidic heavy silt of Field 9 W., Sophia.

Second Ratoon Variety Trials Reaped in Berbice.

Table LVI presents a list of the second ratoon variety trials reaped in Berbice during the period.

TABLE LVI.—**Second Ratoon Variety Trials Reaped in Berbice.**

Estate.	Field.	Age of Canes, Months.	Date of Previous Reaping.	Date of Reaping.	Number of Varieties.	Number of Replicates.	Type of Layout.
Port Mourant	11 T.L.	12.25	26.XI.36	1.XII.37	7	6	Randomised Blocks
Blairmont	24 Rp.	11.50	24.XI.36	10.XI.37	5	6	"

Port Mourant—Field 11 T.L.—Second Ratoons.

Table LVII and Figure XIII show the results secured from Field 11 T.L., Port Mourant.

TABLE LVII.—**Results of a Variety Trial in Field 11 T.L., Port Mourant.**

2nd Ratoons, 12.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %	Glucose Ratio.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre. Tons.
Mean Yields:	P.O.J. 2878	35.42	14.16	8.47	86.8	5.04	113.00	P.O.J. 2878	17.05
	Diamond 10	31.74	14.77	7.49	87.9	4.69	105.16	D. 4/28	16.40
	D. 4/28	29.84	15.19	9.81	87.6	4.52	101.35	D. 11/28	16.34
	D. 11/28	32.36	13.66	9.89	87.8	4.38	98.21	Diamond 10	15.67
	D. 628/21	32.94	13.19	12.22	84.0	4.32	96.86	D. 309/21	15.60
	D. 309/21	26.88	15.60	7.35	88.5	4.19	93.95	D. 628/21	15.56
	D. 625	33.45	12.33	16.11	81.0	4.11	92.15	D. 625	14.78
	Mean:					4.46	100.00		
	Standard Error:					...	...		
	Significant Difference, 20: 1:					..	...		

(*Plant cane results reported in Sugar Bull. No. 5, p. 17.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 39.*)

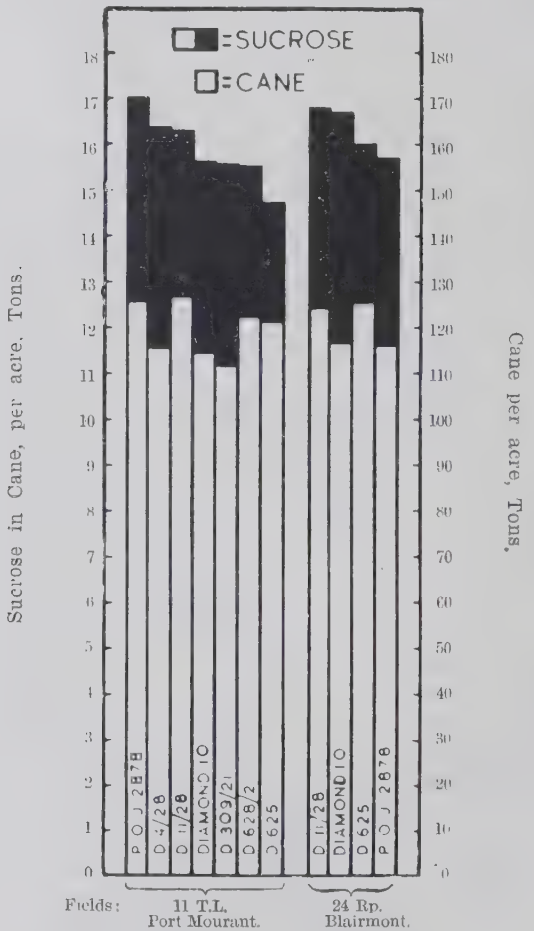
P.O.J. 2878 heads the second ratoon list and that for three crops. In the latter respect it is followed by D. 4/28 (S.C. 12/4 x D. 625) and D. 11/28 (S.C. 12/4 x D. 625), both of which lead Diamond 10 by wide margins. D. 4/28 had an excellent juice.

Rains were heavy just after the harvest of the first ratoons but the succeeding three months were unusually dry. The mid-year wet season was heavier than usual and the total excess on the experiment for the whole growth period amounted to over twelve inches.

The markedly acidic clay of Field 11 T.L., Port Mourant, has been discussed on p. 18 of *Sugar Bulletin* No. 5.

FIG. XIII.

Sucrose and Cane Yields from Plant Canes, First and Second Ratoons at Pln. Port Mourant and Pln. Blairmont.



Blairmont.—Field 24 Rp.—Second Ratoons.

The data from Field 24 Rp., Blairmont, are presented in Table LVIII and Figure XIII.

TABLE LVIII.—**Results of a Variety Trial in Field 24 Rp., Blairmont.**

2ND RATOONS, 11.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	Diamond 10	31.05	14.32	6.29	86.7	4.42	117.87	D. 11/28-	16.83
	D. 11/28	28.71	13.24	11.42	84.2	3.78	100.80	Diamond 10	16.73
	P.O.J. 2878	28.91	13.16	11.95	83.0	3.78	100.80	D. 625	16.03
	D. 625	30.54	12.01	18.35	79.3	3.66	97.60	P.O.J. 2878	15.74
	D. 927/22	25.77	12.01	15.32	79.7	3.00	82.40	D. 927/22°	10.15
	Mean:					3.75	100.00		
	Standard Error:					0.20	5.33		
	Significant Difference, 20: 1:					0.59	15.73		

° Plants and 2nd Ratoons only, 1st Ratoons damaged by rats.

(*Plant cane results reported in Sugar Bull. No. 5, p. 19.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 40.*)

Diamond 10 heads the second ratoon list but is surpassed in total yield for three crops by D. 11/28 (S.C. 12/4 x D. 625) which appears well adapted to this area (see in this Bulletin the plant cane results from Field 37 Rp., Blairmont). P.O.J. 2878 has been somewhat disappointing in this experiment.

Nearly fifteen inches more rain fell on this experiment than might have been expected. Most of this excess occurred in the wet seasons while the dry seasons were unusually dry.

On p. 20 of *Sugar Bulletin* No. 5 will be found a description of the markedly acidic clay of Field 24 Rp., Blairmont.

SECOND RATOON VARIETY TRIALS REAPED IN EAST DEMERARA.

The second ratoon trials harvested in East Demerara are listed in Table LIX.

TABLE LIX.—Second Ratoon Variety Trials Reaped in East Demerara.

Estate.	Field.	Age of Canes, Months.	Date of		Number of		Type of Layout.
			Previous Reaping.	Reaping.	Varieties.	Replicates.	
Cane Grove	17 P.	12.00	8.IV.37	5.IV.38	2	7	Randomised Blocks
Enmore	15 B.A.	12.00	31.III.37	2.IV.38	4	7	,,
Lusignan	40 W.	13.00	19.II.37	22.III.38	3	7	,,
La Bonne Intention	36 L.R.	12.25	1.IV.37	12.IV.38	3	7	,,

Cane Grove—Field 17 P.—Second Ratoons.

The results from Field 17 P., Cane Grove, are presented in Table LX and Figure XIV.

TABLE LX.—Results of a Variety Trial in Field 17 P., Cane Grove.

2ND RATOONS, 12.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	D. 50/30	27.72	14.59	4.61	90.2	4.06	129.71	D. 50/30	13.98
	D. 625	18.27	12.07	11.55	83.1	2.21	70.61	D. 625	10.31
	Mean:					3.13	100.00		
	Standard Error:					0.22	7.03		
	Significant Difference, 20: 1:					0.76	24.28		

(*Plant cane results reported in Sugar Bull. No. 5, p. 20.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 41.*)

D. 50/30 (D. 625 x S.C. 12/4) has practically doubled D. 625 as a second ratoon and is ahead of it by 3.7 tons sucrose in total yield for three crops. Its juice was much better than that of the old standard.

Nearly fifty more inches of rain fell on this field than might normally have been expected. The excesses were particularly marked in the wet seasons.

A description of the highly acidic pegassy clay of Field 17 P., Cane Grove, will be found on p. 21 of *Sugar Bulletin* No. 5.

Enmore—15 B.A.—Second Ratoons.

The results of the trial in Field 15 B.A., Enmore, are given in Table LXI and Figure XIV.

TABLE LXI.—Results of a Variety Trial in Field 15 B.A., Enmore.

2ND RATOONS, 12.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre.		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane, per acre, Tons.
	P.O.J. 2878	35.94	13.44	5.75	88.7	4.80	114.29	P.O.J. 2878	14.80
MEAN	Diamond 10	32.71	13.75	5.99	88.2	4.51	107.38	D. 927/22	14.36
YIELDS:	D. 927/22	37.05	11.28	10.65	81.6	4.16	99.05	Diamond 10	13.61
	D. 625	25.45	13.10	7.97	85.3	3.33	79.29	D. 625	10.69
	Mean:					4.20	100.00		
	Standard Error:					0.13	3.10		
	Significant Difference. 20. 1:					0.39	9.29		

(*Plant cane results reported in Sugar Bull. No. 5, p. 22.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 42.*)

P.O.J. 2878 heads both the second ratoon list and that of total yield for three crops, with Diamond 10 second. D. 927/22 (D. 4399) has proved a heavy cane yielder on this soil type but its juice has been unsatisfactory. Nevertheless it has outyielded D. 625 in three crops, by over three tons of sucrose per acre.

This trial had an excess of 23.32 inches of rain above the normal. The excesses were, however, largely confined to the wet seasons and October—November, 1937, were very dry.

On p. 23 of *Sugar Bulletin* No. 5 will be found a discussion of the highly acidic clay of Field 15 B.A., Enmore.

Lusignan—Field 40 W.—Second Ratoons.

Table LXII and Figure XIV present the results from Field 40 W., Lusignan.

TABLE LXII.—**Results of a Variety Trial in Field 40 W., Lusignan.**

2ND RATOONS, 13.00 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per acre, Tons.
MEAN YIELDS:	D. 49/30	24.78	14.09	3.71	88.9	3.49	123.76	D. 49/30	11.23
	D. 625	20.07	12.47	7.67	84.2	2.51	89.01	D. 182/30	9.01
	D. 182/30	20.80	11.96	5.58	85.6	2.46	87.23	D. 625	8.37
	Mean:					2.82	100.00		
	Standard Error:					0.13	4.61		
	Significant Difference, 20: 1:					0.40	14.18		

(*Plant cane results reported in Sugar Bull. No. 5, p. 23.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 44.*)

D. 49/30 (D. 625) has performed well here both as regards yield of cane and juice qualities, and small commercial extensions have been made on the Estate.

Excess rain on this trial totalled 30.73 inches. It was rather dry, however, just after the harvest of the first ratoons and again from September to November, 1937.

The highly acidic fine silt of Field 40 W., Lusignan, has been described on p. 24 of *Sugar Bulletin* No. 5.

La Bonne Intention—Field 36 L.R.—Second Ratoons.

The data from Field 36 L. R., La Bonne Intention, will be found in Table LXIII and Figure XIV.

TABLE LXIII.—**Results of a Variety Trial in Field 36 L.R., La Bonne Intention.**

2ND RATOONS, 12.25 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.
MEAN YIELDS:	D. 182/30	28.26	12.02	6.85	85.9	3.38	101.20	D. 625	12.26
	D. 11/28	27.83	12.01	5.43	87.7	3.33	99.70	D. 182/30	11.72
	D. 625	24.18	13.58	6.70	87.8	3.30	98.80	D. 11/28	11.65
	Mean:					3.34	100.00		
	Standard Error:					—	—		
	Significant Difference, 20: 1:					—	—		

(*Plant cane results reported in Sugar Bull. No. 5, p. 25.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 45.*)

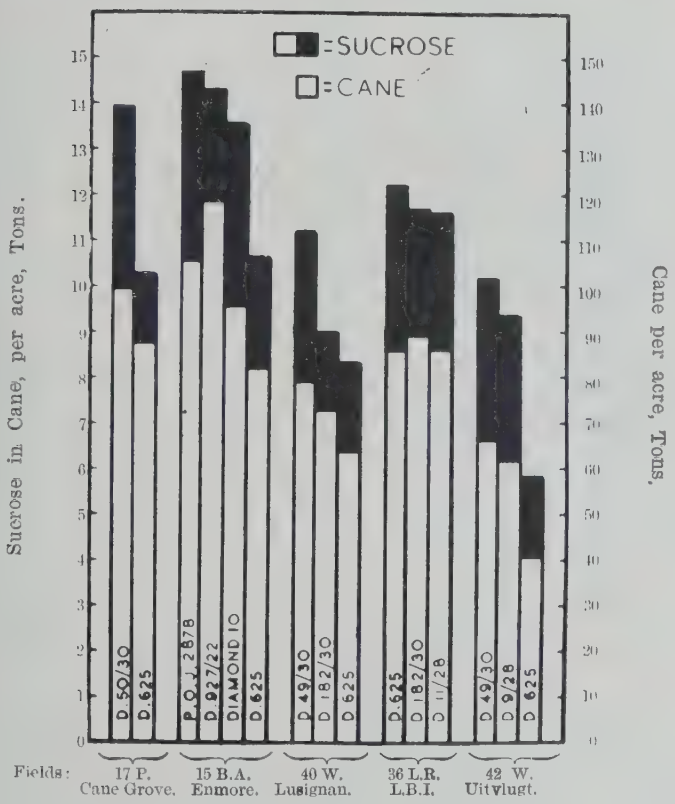
Both D. 182/30 and D. 11/28 are slightly ahead of D. 625 as second ratoons, but the old standard cane leads in total yield for three crops. The juice of D. 625 was better than usual.

This trial received excessive rains in the third, fourth, and last three months of its growth. For the rest of the time the rainfall tended to be average or subnormal.

On p. 26 of *Sugar Bulletin* No. 5 will be found a description of the markedly acidic heavy silt of Field 36 L. R., La Bonne Intention.

FIG. XIV.

Sucrose and Cane Yields from Plant Canes, First and Second Ratoons at Pln. Cane Grove, Pln. Enmore, Pln. Lusignan, Pln. La Bonne Intention and Pln. Uitvlugt.



Second Ratoon Variety Trials Reaped in West Demerara.

The only second ratoon variety trial reaped in West Demerara during the year was a 3 x 7 Randomised-blocks test in Field 42 W., Uitvlugt, which had been harvested as first ratoons on 16.III.37 and was reaped again on 2.III.38. The results are given in Table LXIV and Figure XIV.

Table LXIV.—**Results of a Variety Trial in Field 42 W., Uitvlugt.**

2nd Ratoons, 11.50 months.

	Variety.	Cane per Acre, Tons.	Sucrose in Cane, %.	Glucose Ratio.	Purity.	Sucrose in Cane per Acre,		Combined Results for 3 Crops, Plants, 1st and 2nd Ratoons.	
						Tons.	% Mean.	Variety.	Sucrose in Cane per acre, Tons.
Mean Yields:	D. 49/30	20.10	14.85	3.19	91.2	2.98	119.20	D. 49/30	10.20
	D. 9/28	20.30	14.45	3.96	90.2	2.93	117.20	D. 9/28	9.40
	D. 625	11.20	14.22	6.94	87.3	1.59	63.60	D. 625	5.88
	Mean:					2.50	100.00		
	Standard Error:					0.12	4.80		
	Significant Difference, 20 : 1 :					0.37	14.80		

(*Plant cane results reported in Sugar Bull. No. 5, p. 27.*)
(*First ratoon results reported in Sugar Bull. No. 6, p. 46.*)

Both D. 49/30 (D. 625) and D. 9/28 (S.C. 12/4 x D.625) have far outyielded D. 625, and the first-named deserves commercial testing on this soil type.

The dry seasons experienced by this test, were drier and the wet seasons wetter than normal.

The markedly acidic pegassy clay of Field 42 W., Uitvlugt, was described on p. 28 of *Sugar Bulletin* No. 5.

SUB-SECTION D.—DISCUSSION AND SUMMARY OF RESULTS.

Tables LXV, LXVI and LXVII summarise, respectively, the relative status of :—

(a) The varieties which have been reaped as plant canes, first ratoons and second ratoons ;

(b) The varieties which have been reaped as plant canes and first ratoons only ;

(c) The varieties which have been reaped as plant canes only.

TABLE LXV.—**Mean Sucrose Yields from Three Crops.**

Variety.	Mean Sucrose, Tons per acre (Corrected Values).				Total Yield, D. 625=100.0
	Plants.	First Ratoons.	Second Ratoons.	Total.	
P.O.J. 2753	4.50	4.45	5.27	14.22	126.06
D. 49/30	**4.83**	**4.49**	4.61	13.93	123.49
D. 50/30	**4.57**	*3.88*	5.36	13.81	122.43
P.O.J. 2878	**5.38**	**4.54**	**3.69**	**13.61**	**120.66**
Diamond 10	**5.15**	**4.20**	**4.00**	**13.35**	**118.35**
Co. 213	**4.93**	**4.49**	3.49	12.91	114.45
D. 9/28	**4.49**	*4.13*	*3.99*	*12.61*	111.79
P.O.J. 2727	*4.25*	*4.34*	3.76	12.35	109.49
D. 628/21	**4.90**	**3.99**	*3.25*	*12.14*	107.62
D. 66/30	**4.72**	**4.11**	3.19	12.02	106.56
S.W. 3	*5.20*	3.87	2.90	11.97	106.12
D. 927/22	**5.08**	**3.85**	*3.03*	*11.96*	106.03
D. 178/29	4.27	4.53	2.91	11.71	103.81
T. 1198	**4.93**	*3.52*	3.25	11.70	103.72
D. 309/21	**4.66**	*3.64*	3.39	11.69	103.63
D. 11/28	**4.78**	**3.71**	**3.07**	**11.56**	**102.48**
D. 182/30	**4.84**	*3.77*	2.94	11.55	102.39
D. 4/28	**4.57**	**3.62**	*3.19*	*11.38*	100.89
D. 69/29	5.42	3.21	2.66	11.29	100.09
D. 625	**4.68**	**3.68**	**2.92**	**11.28**	**100.00**

NOTE :—**Heavy type indicates means of six or more tests ;**
Italics indicate means of three to five tests ;
Ordinary type indicates means of one or two tests.

P.O.J. 2753 owes its premier position mainly to one excellent second ratoon result. It must be tested further before it can be recommended.

D. 49/30 (D. 625) is maintaining its early promise and it should be possible, at the end of another year, to rate it with some degree of certainty. In the meantime estates are advised to extend their nurseries and establish a field or two of this variety for commercial tests.

D. 50/30 (D. 625 x S.C. 12/4) owes its position in the table largely to a single second ratoon result. Its average for eight plant cane and three first ratoon tests has not been impressive.

Co. 213 continues to show much promise and the planting of a few commercial trials on each estate is advised.

The next four canes on the list (D. 9/28, P.O.J. 2727, D. 628/21, D. 66/30), although superior to the old standard (D.625), will not, in general, compete successfully against P.O.J. 2878 and Diamond 10.

Only two other canes call for special comment, *viz.*, D. 927/22 (D. 4399) and D. 11/28 (S.C. 12/4 x D. 625). These canes, though not generally better than P.O.J. 2878, appear well adapted to certain areas. The former should be tested commercially at Pln. Diamond (Fields 85-95 G.D. and vicinity) and the front of Pln. Enmore, and the latter in the frontlands at Pln. Uitvlugt and the Rampoor section, Pln. Blairmont.

TABLE LXVI.—**Mean Sucrose Yields from Plant Canes and First Ratoons.**

Variety.	Mean Sucrose, Tons per acre (Corrected Values).			Total Yield, D. 625=100.0
	Plants.	First Ratoons.	Total.	
D. 75/30	**5.78**	*4.25*	*10.03*	119.98
P.O.J. 2878	**5.38**	**4.54**	**9.92**	**118.66**
D. 150/30	*5.27*	4.38	9.65	115.43
D. 67/30	*5.32*	4.14	9.46	113.16
Diamond 10	**5.15**	**4.20**	**9.35**	**111.84**
D. 147/30	**5.25**	3.76	9.01	107.78
M.P.R. 7	4.67	4.05	8.72	104.31
D. 11/32	4.11	4.61	8.72	104.31
D. 1/31	*4.82*	*3.86*	*8.68*	103.83
D. 167/30	*4.74*	3.84	8.58	102.63
D. 173/30	*5.11*	3.43	8.54	102.15
D. 219/30	*4.70*	3.77	8.47	101.32
D. 205/30	**5.21**	3.21	8.42	100.72
D. 625	**4.68**	**3.68**	**8.36**	**100.00**
D. 235/30	**5.22**	3.12	8.34	99.76
D. 113/30	**5.12**	3.22	8.34	99.76
D. 164/30	**4.87**	*3.40*	*8.27*	98.92
D. 2/31	*4.08*	4.08	8.16	97.61
F.C. 916	**4.53**	3.61	8.14	97.37
M.P.R. 42	*4.71*	3.02	7.73	92.46
D. 170/30	**4.43**	2.74	7.17	85.77
D. 183/29	4.36	2.16	6.52	77.99

NOTE:—**Heavy type indicates means of six or more tests;**
Italics indicate means of three to five tests;
Ordinary type indicates means of one or two tests.

D. 75/30 (Badila x D. 625), which heads the list, has established itself as a heavy cane yielder and second ratoon results will be awaited with interest. Its juice is not as good as that of Diamond 10 or P.O.J. 2878 but this should not deter planters from extending their nurseries or establishing some where they do not now exist.

D. 150/30, D. 67/30 and, to a lesser extent, D. 147/30 have maintained some of their early promise.

M.P.R. 7 and D. 11/32 will be tested further but the other canes in the list will be discarded.

TABLE LXVII.—Mean Sucrose Yields from Plant Canes.

Variety.	Mean Sucrose, Tons per acre (Corrected Values). Plants.	Yield, D. 625=100.0
D. 419/33	6.55	139.96
D. 30/33	6.00	128.21
D. 5/32	5.59	119.44
D. 456/33	5.43	116.03
P.O.J. 2878	**5.38**	**114.96**
D. 8/33	5.26	112.39
D. 121/33	5.24	111.97
D. 34/33	5.16	110.26
Diamond 10	**5.15**	**110.04**
D. 24/33	5.10	108.97
D. 39/33	5.09	108.76
D. 31/33	5.08	108.55
D. 7/33	*5.03*	107.48
D. 40/33	4.91	104.91
D. 1758/22	4.84	103.42
D. 94/33	4.84	103.42
D. 15/33	4.83	103.21
D. 12/32	4.73	101.07
D. 27/33	4.72	100.85
D. 625	**4.68**	**100.00**

TABLE LXVII.—**Mean Sucrose Yield from Plant Canes—(Contd.).**

Variety.	Mean Sucrose, Tons per acre (Corrected Values). Plants.	Yield, D. 625=100.0
D. 102/33	4.67	99.79
D. 107/33	4.66	99.57
F.C. 998	*4.63*	98.93
D. 9/33	4.63	98.93
D. 7/32	4.50	96.15
D. 42/33	4.47	95.51
M.P.R. 49	*4.41*	94.23
D. 38/33	4.41	94.23
D. 11/33	4.40	94.02
D. 330/33	4.37	93.38
D. 10/32	4.31	92.09
D. 178/33	4.31	92.09
D. 46/33	*4.28*	91.45
D. 25/33	4.27	91.24
D. 295/33	4.25	90.81
D. 450/33	4.25	90.81
D. 125/33	4.17	89.10
M.P.R. 145	4.06	86.75
P.R. 826	*3.85*	82.26
D. 148/33	3.85	82.26
M.P.R. 151	*3.71*	79.27
D. 169/33	3.60	76.92
D. 57/33	3.56	76.07
T. 2020	**3.30**	**70.51**
D. 3/31	3.19	68.16
D. 4/31	2.71	57.91

NOTE:—**Heavy type indicates means of six or more tests;**
Italics indicate means of three to five tests;
Ordinary type indicates means of one or two tests.

Many of the new seedlings show great promise but little can be said of them until more experimental data are available.

D. 419/33 (Co. 281 x Diamond 10) gave a heavy yield of cane and a moderately good juice whereas D. 30/33 (S.C. 12/4 x Diamond 10) gave a moderate cane yield but very good juice. D. 5/32 (S.C. 12/4) yielded a high tonnage of moderately rich cane.

D. 456/33 (P.O.J. 2878 x Diamond 10) has made good growth in numerous nurseries at Sophia and on the estates and yielded an excellent juice in the only test in which it has, as yet, been harvested.

D. 8/33 (D. 53/27 x Diamond 10) and D. 121/33 (D. 666/18 x Diamond 10) also have fair juices but D. 34/33 showed a high glucose ratio.

D. 7/33 (D. 53/27 x Diamond 10), which was tested thrice, is a rapid grower and gave heavy yields of rather poor cane.

Most of the canes in the above table will be discarded.

MANURIAL TRIALS.

This section deals with the results of 21 manurial trials reaped during the year ending 30th June, 1938. The matter is arranged as in previous Bulletins.

Samples of cane were collected from each plot of each experiment and tested at the Sugar Experiment Station's Laboratory; permitting the effect of the various treatments on the quality of the cane to be subjected to statistical examination.

Soil samples collected from each experimental site have been examined in the chemical laboratory of the Department of Agriculture. The detailed results of these analyses appear in Appendix II (*b*). Where the field is mentioned for the first time in this Bulletin (in general where plant cane results are reported), a brief description of the soil and subsoil is given in the text. Where, however, ratoon results are here recorded, a reference is given in the text to the page and Bulletin where the plant cane results and a description of the soils appeared.

SUB-SECTION A.—NITROGENOUS MANURES.

(A 1) Sulphate of Ammonia on Flood-Fallowed Frontland (Plant Canes, P.O.J. 2878).

Field 23 R., Port Mourant.

This trial forms part of a chain of complex experiments designed to investigate the effects of adequate applications of phosphatic and potassic manures in combination with heavy dressings of sulphate of ammonia. The experiments include dressings of sulphate of ammonia at 2, 4 and 6 cwt. per acre, superphosphate of lime at 0, 3 and 6 cwt. per acre, and sulphate of potash at 0, 2 and 4 cwt. per acre. The plant cane results from two other fields were discussed in *Sugar Bulletin* No. 6, and the first ratoon results from those fields appear next in this section.

Rains on this trial were subnormal for the first four months. The fifth month was a heavy one but the next three were drier than usual. Precipitation was excessive in the three months prior to harvest.

The topsoil of Field 23 R., Port Mourant, is a pegassy clay of highly acid reaction overlying an acid clay subsoil. The organic matter in the topsoil is normal but that in the subsoil is very low. The carbon : nitrogen ratio, salinity and theoretical lime requirement in both topsoil and subsoil are about average.

It will be seen from Table LXVIII, that in this experiment applications of sulphate of ammonia at rates in excess of 2 cwt. per acre had no definite effect on the yield of cane, the sucrose content of the cane, or on the juice purity. This result confirms those of previous trials which indicated that plant canes of P.O.J. 2878 grown on flood-fallowed frontland should receive sulphate of ammonia at the rate of 2 cwt. per acre.

TABLE LXVIII.

Effect of Sulphate of Ammonia on Plant Canes of P.O.J. 2878 on Flood-Fallowed Frontland at Pln. Port Mourant.

S/A., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
2	43.03	14.27	...	89.4	5.23
4	48.26	14.44	...	89.5	5.16
6	48.27	14.24	...	89.4	5.19
Means	46.52	14.32	6.662	89.4	5.19
S.E. of means	...	...	...	...	...
Significant Differences (20 : 1)	...	...	...	...	...

(A 2—A 3) SULPHATE OF AMMONIA ON FLOOD-FALLOWED FRONTLAND (FIRST RATOONS, P.O.J. 2878).

Fields 81 R.H., Rose Hall and 26 Rp., Blairmont.

(*Plant cane results reported in Sugar Bull. No. 6, pp. 57-61.*)

At Rose Hall the total rainfall on the trial approached the normal but it was abnormally distributed for there was a total deficit of 9.45 inches during the first dry season (February-March 1937) and a marked excess in the normally heavy month of June.

At Blairmont some 14.8 inches of rain, in excess of the normal, fell on the trial. The excesses were recorded in the wet seasons while the dry seasons were abnormally dry.

The results of the two trials are presented in Table LXIX and Figure XV.

TABLE LXIX.

Effect of Sulphate of Ammonia on First Ratoons of P.O.J. 2878 on Flood-Fallowed Frontland.

S/A., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
	Pln.	*Rose Hall,*	*Field 81*	*Rose Hall.*	
2	29.79	12.37	3.810	85.4	6.87
4	35.27	12.95	4.511	86.3	6.95
6	39.87	13.04	5.099	85.0	7.63
Means	34.98	12.79	4.473	85.6	7.15
S.E. of means	1.33	...	0.170	...	...
Significant Differences (20 : 1)	4.01	...	0.513	...	...
	Pln.	*Blairmont,*	*Field 26*	*Rampoor.*	
2	29.26	15.06	4.345	86.5	8.97
4	33.87	15.12	5.030	85.1	7.84
6	35.33	14.36	5.246	83.8	9.61
Means	32.82	14.85	4.874	85.1	8.81
S.E. of means	1.09	...	0.162	0.6	...
Significant Differences (20 : 1)	3.28	...	0.487	1.9	...

Conclusions :—Under the conditions of the experiments :

(a) Increasing doses of sulphate of ammonia have been responsible for increased cane yields. At Rose Hall an application at the rate of 4 cwt. per acre proved definitely superior to one of 2 cwt., while one of 6 cwt. was definitely better than one of 4 cwt. At Blairmont, an application at the rate of 4 cwt. per acre, proved definitely superior to one of 2 cwt. per acre, but there was no further definite increase when the dose was raised to 6 cwt. per acre.

(b) At Rose Hall the various levels of sulphate of ammonia had no definite differential effect on the sucrose content of the cane, the juice purity or the glucose ratio. At Blairmont there was likewise no definite effect on the sucrose content of the cane or the glucose ratio, but the juice purity was adversely effected by the application of 6 cwt. sulphate of ammonia per acre, as compared with the 2 cwt application.

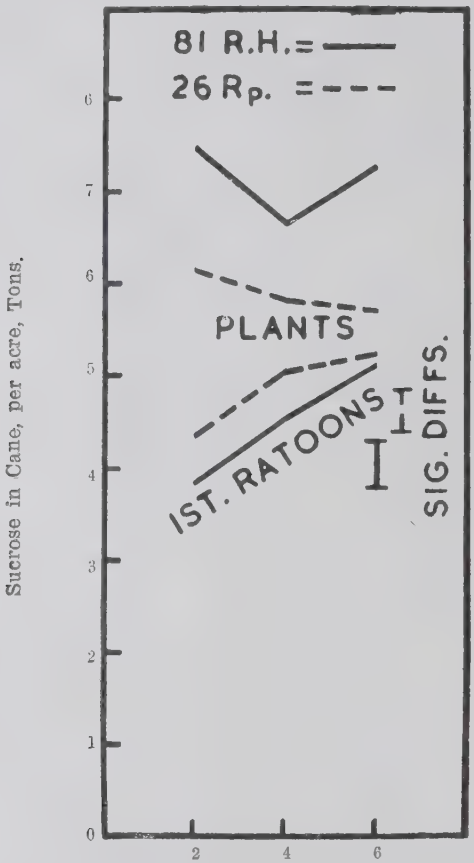


FIG. XV.

Effect of Sulphate of Ammonia on Flood-Fallowed Frontland (P.O.J. 2878: Plants and First Ratoons).

(A 4—A 5) SULPHATE OF AMMONIA ON FLOOD-FALLOWED FRONTLAND (SECOND RATOONS, P.O.J. 2878).

Fields 8 Sp., Skeldon and 45 O., Ogle

(*Plant cane results reported in Sugar Bull. No. 5, pp. 72-75.*)
(*First ratoon results reported in Sugar Bull. No. 6, pp. 62-65.*)

These two trials constitute part of a chain of 4 x 4 latin squares designed to determine the nitrogen requirements of second ratoons of P.O.J. 2878 growing on flood-fallowed frontland soils.

At Skeldon an excess of rainfall above the normal was recorded during seven months of the growing period and the normally wet month of June had more than one hundred per cent. excess, but certain critical months of the dry season were drier than usual.

At Ogle rains were excessive in December and January (1936—37) but subnormal before and after. In the five months prior to harvest they surpassed the normal.

The results of the two trials and the combined results of these with two other trials (Field 8 E. & M., Skeldon, and Field 26 W., Lusignan, reported in *Sugar Bulletin* No. 6, pp. 65—68) are presented in Table LXX and Figure XVI. Each trial consisted of three 4 x 4 latin squares.

TABLE LXX.

Effect of Sulphate of Ammonia on Second Ratoons of P.O.J. 2878 on Flood-Fallowed Frontland.

S/A., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
	Pln. Skeldon, Field 8		*Springlands.*		
2	31.15	14.68	4.498	86.6	6.22
4	37.49	14.52	5.414	86.1	6.45
6	37.45	14.34	5.408	87.4	7.06
8	38.84	14.21	5.608	85.6	7.51
Means	36.23	14.44	5.232	86.4	6.81
	Pln. Ogle, Field 45 Ogle.				
2	26.54	13.11	3.469	86.6	7.08
4	33.52	13.33	4.381	86.1	7.26
6	35.70	13.13	4.666	85.2	8.52
8	35.87	12.70	4.688	85.4	7.78
Means	32.91	13.07	4.301	85.8	7.66
	Combination of Four Experiments.				
2	26.41	14.18	3.745	86.5	6.29
4	32.39	14.15	4.583	86.1	6.69
6	33.67	13.79	4.643	86.0	7.26
8	34.85	13.63	4.750	85.3	7.27
Means	31.83	13.94	4.430	86.0	6.88
S.E. of means	0.53	0.12	0.074	0.2	0.21
Significant Differences (20 : 1)	1.53	0.35	0.213	0.6	0.61

'Z' value obtained for effect of nitrogen on tonnage.....=2.3078
" " " " " " " sucrose content.....=0.8171
" " " " " " " juice purity.....=0.8815
" " " " " " " glucose ratio.....=0.7954
" " required for P=0.01.....=0.7086

Conclusions :—Under the conditions of the experiments :

(a) The effect of environment, age of cane and season have had a very marked effect on the tonnage, the sucrose content, the juice purity and the glucose ratio.

(b) The yield of cane has been affected by increasing applications of sulphate of ammonia and a 4 cwt. application is definitely and economically superior to one of 2 cwt. No further significant increase in yield is obtained by raising the application to 6 or 8 cwt. per acre.

(c) Increasing doses of sulphate of ammonia have had a definitely adverse effect on the sucrose content of the cane, the juice purity and the glucose ratio. In these respects, however, a 4 cwt. application does not differ significantly from one of 2 cwt., but one of 6 cwt. produces significantly adverse effects (as compared with a 2 cwt. application) on the sucrose content of the cane and the glucose ratio, while an 8 cwt. application produces significantly adverse effects on these two factors and juice purity as well.

(A 6—A 7) Sulphate of Ammonia on Flood-Fallowed Frontland (Third Ratoons, P.O.J. 2878).

Fields 8 E & M., Skeldon and 26 W., Lusignan.

(*First ratoon results reported in Sugar Bull. No. 5, pp. 75-78.*)
(*Second ratoon results reported in Sugar Bull. No. 6, pp. 65-68.*)

These two trials constitute part of a chain of experiments designed to determine the nitrogen requirements of third ratoons of P.O.J. 2878 growing on flood-fallowed frontland.

At Skeldon, an excess of rainfall above the normal was recorded during eight months of the growing period and the normally wet month of June had more than one hundred per cent. excess, but certain critical months of the dry season were drier than usual.

At Lusignan, rainfall conditions were fairly satisfactory for the first three months of growth but precipitation was excessive during the next two. Then followed a droughty period and, next, three unusually heavy months.

The results of the two trials (each of three 4 x 4 latin squares) are given in Table LXXI, where also their data are combined in the third section, and illustrated in Figure XVI.

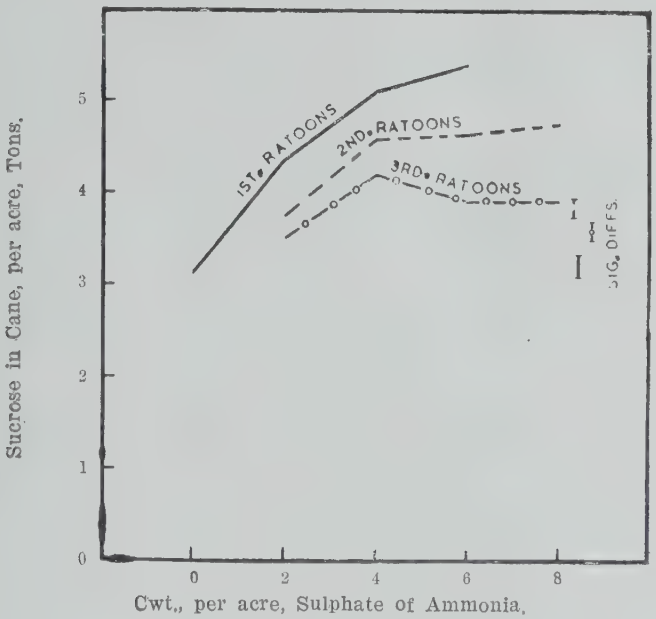


FIG. XVI.

Effect of Sulphate of Ammonia on Flood-Fallowed Frontland (P.O.J. 2878: Combined Results).

TABLE LXXI.

Effect of Sulphate of Ammonia on Third Ratoons of P.O.J. 2878 on Flood-Fallowed Frontland.

S/A., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
	Pln. Skeldon, Field 8 Eliza and Mary.				
2	31.67	14.02	4.418	86.6	5.80
4	35.67	14.29	4.976	87.3	5.90
6	34.91	13.84	4.870	85.7	7.26
8	35.49	13.65	4.951	85.6	7.27
Means	34.43	13.95	4.804	86.3	6.56
	Pln. Lusignan, Field 26 West, Lusignan.				
2	19.17	13.50	2.588	88.5	6.56
4	25.00	13.41	3.352	88.1	7.79
6	24.34	12.58	3.062	87.1	7.91
8	26.88	11.51	3.094	84.9	8.40
Means	23.85	12.75	3.024	87.1	7.66
	Combination of Two Experiments.				
2	25.42	13.76	3.498	87.5	6.18
4	30.34	13.85	4.202	87.7	6.84
6	29.62	13.21	3.913	86.4	7.58
8	31.19	12.58	3.924	85.2	7.83
Means	29.14	13.35	3.884	86.7	7.11
S.E. of means	0.54	0.17	0.072	0.4	0.33
Significant Differences (20 : 1)	1.56	0.49	0.208	1.3	0.95

'Z' value obtained for effect of nitrogen on tonnage.....=1.5517
" " " " " " " sucrose content.....=1.2067
" " " " " " " juice purity.....=1.3696
" " " " " " " glucose ratio.....=0.8143
" " required for P=0.01.....=0.7086

Conclusions:—Under the conditions of the experiments:

(a) The effect of environment, age of cane and season have had a very marked effect on the tonnage, the sucrose content, the juice purity and on the glucose ratio.

(b) An application of 4 cwt. sulphate of ammonia per acre has proved to be the most efficient from both the economic and statistical standpoints.

(c) The higher doses (6 and 8 cwt.) of sulphate of ammonia have had adverse effects on the sucrose content of the cane, the juice purity and the glucose ratio, but the samples from the 4 cwt. treatment did not differ statistically, in these respects, from those from the 2 cwt. treatment.

(A 8) Sulphate of Ammonia on Flood-Fallowed Frontland (Third Ratoons, Diamond 10).

Field 7 E. & M., Skeldon.

(First ratoon results reported in Sugar Bull. No. 5, pp. 79-81.)

(Second ratoon results reported in Sugar Bull. No. 6, pp. 68-69.)

An excess of rainfall above the normal was recorded during eight months of the growing period and the normally wet month of June had more than one hundred per cent. excess, but certain critical months of the dry season were drier than usual.

The results of the three 4 x 4 latin squares constituting the trial are combined in Table LXXII and Figure XVII.

Table LXXII.

Effect of Sulphate of Ammonia on Third Ratoons of Diamond 10 on Flood-Fallowed Frontland at Pln. Skeldon.

S/A., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
0	22.87	15.49	3.490	87.2	5.61
2	30.10	14.99	4.593	86.6	6.56
4	32.73	15.32	4.995	86.1	7.19
6	34.31	15.23	5.236	85.6	7.21
Means	30.00	15.26	4.578	86.4	6.64
S.E. of means	0.83	...	0.127	...	0.29
Significant Differences (20 : 1)	2.42	...	0.369	...	0.85

'Z' value obtained for effect of nitrogen on tonnage.....=1.8115
" " " " " " " " glucose ratio.....=0.9627
" " required for P=0.01.....=0.7757

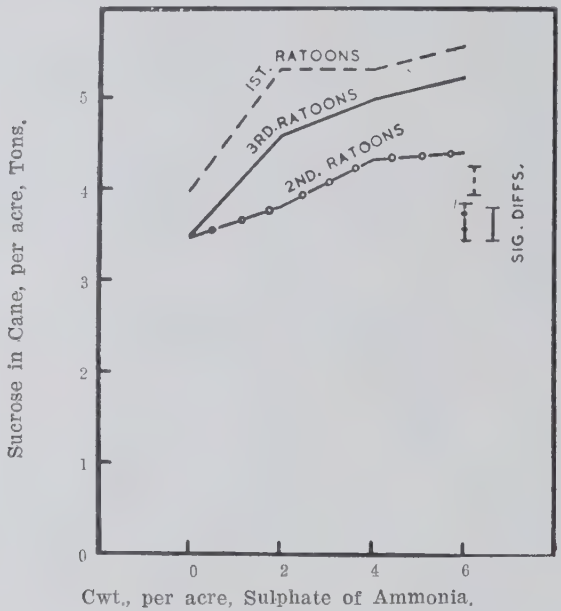


FIG. XVII.

Effect of Sulphate of Ammonia on Flood-Fallowed Frontland. (Diamond 10: First, Second and Third Ratoons).

Conclusions:—Under the conditions of the experiment:

(a) Increasing doses of sulphate of ammonia have had a beneficial effect on cane yield, a 2 cwt. application being significantly better than none, and a 4 cwt. application significantly better than one of 2 cwt. The difference between these last two treatments would, however, leave but a slight, if any, margin of profit when the cost of the fertiliser is taken into account.

(b) All the fertiliser treatments affected the glucose ratio adversely as compared with the no manure plots, but did not differ significantly among themselves. They had no definite effect on the sucrose content of the cane or the juice purity.

(A 9) Sulphate of Ammonia on Pegassy Clay (Plant Canes, P.O.J. 2878).

Field 4 P., Cane Grove.

This experiment is one of a chain of complex fertiliser trials on pegassy clay designed to investigate the effect of heavy applications of sulphate of ammonia in conjunction with various combinations of sulphate of potash and basic slag.

This field had nearly 17 inches rainfall above the normal. Much of this excess, however, fell in the months that are usually wet. The dry months of February, March and September (1937) were drier than usual.

The topsoil of Field 4 P., Cane Grove, is an extremely acid pegasse overlying a very highly acid pegassy clay subsoil. The organic matter in both soils is high with an average carbon : nitrogen ratio. The salinity of both topsoil and subsoil is low and the theoretical lime requirement very high.

The results are presented in Table LXXIII and Figure XVIII.

Table LXXIII.

Effect of Sulphate of Ammonia on Plant Canes of P.O.J. 2878 on Pegassy Clay at Pln. Cane Grove.

S/A., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
6	35.44	13.43	4.806	84.7	14.35
8	38.58	13.50	5.231	84.9	14.81
10	40.49	13.74	5.490	85.1	14.63
Means	38.17	13.56	5.176	84.9	14.60
S.E. of means	1.38	...	0.187	...	...
Significant Differences (20 : 1)	4.16	...	0.564	...	...

Conclusions :—Under the conditions of the experiment :

(a) Ten cwt. of sulphate of ammonia per acre gave a significantly higher yield than 6 cwt., but did not differ statistically from 8 cwt. per acre. The increase in yield would not, however, make the application of 10 cwt. sulphate of ammonia per acre a sound economic proposition.

(b) The varying doses of sulphate of ammonia were without definite effect on the sucrose content of the cane, juice purity or glucose ratio.

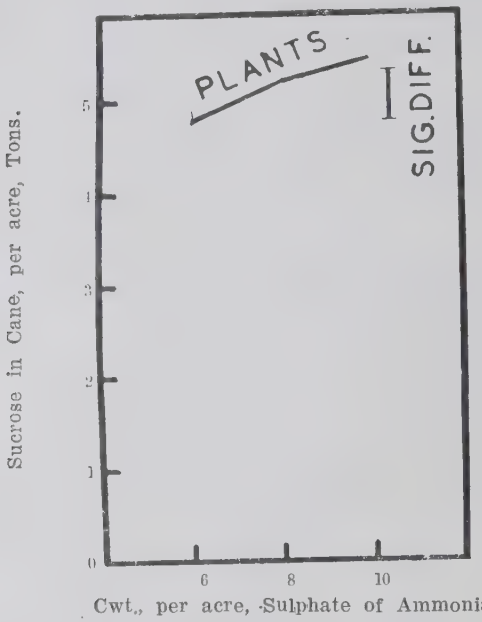


FIG. XVIII.

Effect of Sulphate of Ammonia on Pegassy Clay (P.O.J. 2878, Plants).

(A 10) SULPHATE OF AMMONIA ON PEGASSY CLAY (FIRST RATOONS, P.O.J. 2878).

Field 31 E., Uitvlugt.

(Plant cane results reported in Sugar Bull. No. 6, pp. 72-74.)

This field had 42.19 inches more rain than might have been expected. The excesses occurred in the months just after the harvest of the plant cane and preceding that of the first ratoons, but rains were deficient during the middle period of growth.

The effect of the varying levels of sulphate of ammonia is shown in Table LXXIV and Figure XIX.

TABLE LXXIV.

Effect of Sulphate of Ammonia on First Ratoons of P.O.J. 2878 on Pegassy Clay at Pln. Uitvlugt.

S/A., Cwt./acre	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
6	37.64	15.10	5.891	90.2	4.66
8	38.15	14.78	5.766	88.7	5.43
10	41.23	13.97	5.450	88.3	6.20
Means	39.01	14.62	5.702	89.1	5.44
S.E. of means	...	0.30	0.117	0.6	0.38
Significant Differences (20 : 1)	...	0.91	0.355	1.8	1.14

'Z' value obtained for effect of nitrogen on sucrose content..... = 0.9695
" " " " " " " " juice purity..... = 0.7597
" " " " " " " " glucose ratio..... = 1.0567
" " required " P = 0.05..... = 0.7568

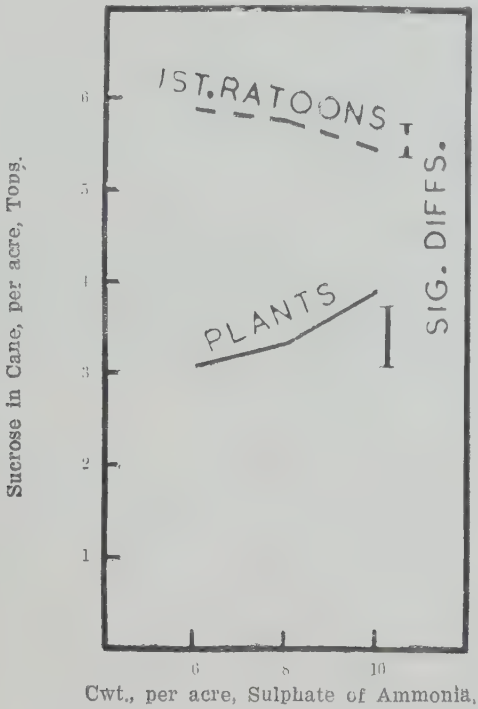


FIG. XIX.

Effect of Sulphate of Ammonia on Pegassy Clay (P.O.J. 2878: Plant Canes and First Ratoons).

The average yield of the trial was much higher in first ratoons than in plants.

Increasing doses of sulphate of ammonia have had no definite effect upon the yield of cane but a significant and deleterious effect on its sucrose content, the juice purity and the glucose ratio.

As shown in Table LXXV, there was an interesting and significant interaction between sulphate of ammonia and sulphate of potash on the yield of cane.

TABLE LXXV.

Interaction of Sulphate of Ammonia and Sulphate of Potash on Plant Canes of P.O.J. 2878 on Pegassy Clay.

	Cane per Acre, Tons.	
	High Potash.	No Potash.
High Nitrogen (10 cwt. S.A/Acre)	40.78	44.94
Low Nitrogen (6 „ „ „)	42.09	35.44
Difference due to high Nitrogen	−1.31	9.50

'Z' value obtained for interaction.....=0.8211
„ „ required „ P=0.05.....=0.7568

With no potash, 10 cwt. of sulphate of ammonia was definitely better than 6 cwt., the difference being the economically sound margin of 9.5 tons of cane. Where only 6 cwt. of sulphate of ammonia was used, a dressing of 4 cwt. sulphate of potash tended to bring the yield nearly up to that obtainable from 10 cwt. sulphate of ammonia alone.

In the plant canes (on an adjacent area of this same field), 10 cwt. of sulphate of ammonia proved to be significantly better than 6 cwt. and there was also a definite response to potash, but there was no indication of a nitrogen x potash interaction. It is interesting to note that in the first ratoons and in the presence of 6 cwt. sulphate of ammonia per acre, 4 cwt. of sulphate of potash gave 6.65 tons of cane per acre more than "no potash." This difference verges closely on being statistically significant.

(A11) Sulphate of Ammonia on Pegassy Clay

(Second Ratoons, P.O.J. 2878).

Field 33 E., Uitvlugt.

(Plant cane results reported in Sugar Bull. No. 5, pp. 81-83.)

It was, unfortunately, not possible to harvest the first ratoons of this test, but the data from the second ratoons are presented in Table LXXVI and Figure XX.

There was a total excess of 9.57 inches of rain on this experiment but the surpluses were mainly in the wet seasons while the dry seasons were too dry.

Table LXXVI.

Effect of Sulphate of Ammonia on Second Ratoons of P.O.J. 2878 on Pegassy Clay at Pln. Uitvlugt.

S/A., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
2	21.97	13.85	3.043	90.8	3.85
4	26.00	13.64	3.546	89.3	4.47
6	28.86	13.30	3.838	89.7	5.13
8	28.96	13.68	3.962	88.8	6.11
10	28.31	12.74	3.607	86.6	7.02
Means	26.82	13.44	3.599	89.0	5.32
S.E. of means	0.76	0.24	0.102	0.5	0.37
Significant Differences (20 : 1)	2.34	0.74	0.314	1.5	1.14

"Z" value obtained for effect of nitrogen on tonnage.....=1.3637
" " " " " " " " sucrose content.....=0.6007
" " " " " " " " juice purity.....=1.1378
" " " " " " " " glucose ratio.....=1.2301
" " required for P=0.05.....=0.5097
" " " " P=0.01.....=0.8443

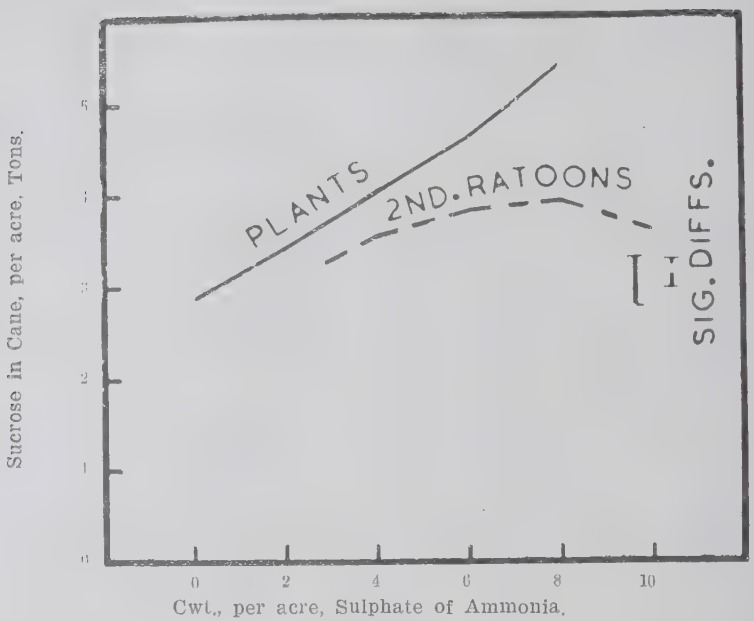


FIG. XX.

Effect of Sulphate of Ammonia on Pegassy Clay (P.O.J. 2878: Plant Canes and Second Ratoons).

Under the conditions of the experiment, increasing doses of sulphate of ammonia up to 8 cwt. per acre have had a beneficial effect on the yield of cane and sucrose and a detrimental effect on the sucrose content of the cane, its juice purity and glucose ratio. From an economic aspect, the optimum application was 4 cwt. sulphate of ammonia per acre.

A 12—A 16) NITROGENOUS AND PHOSPHATIC MANURES ON PEGASSY CLAY (PLANT CANES, P.O.J. 2878).

Fields 10 C. (A and B) Wales; 64 and 70 Z., Uitvlugt; and 36 S.D., Cane Grove.

These trials constitute a chain of 6 x 6 latin squares on pegassy clay designed mainly to investigate the possibility of finding a non-acidifying nitrogenous fertiliser for this already very acid soil type. In one previous trial in Field 51 M., Cane Grove (see *Sugar Bulletin* No. 4, pp. 89-91), on pegassy

clay, Nicifos (18 : 18) had given such promising results that it seemed desirable to test it further and since basic slag is the principal phosphatic agent used on this soil type it was necessary to include a treatment with this and sulphate of ammonia as a measure of the efficiency of Nicifos.

At Wales there was a total of 6.89 inches of excess rain on the experiments but the excesses occurred in the wet seasons while the dry seasons were unusually dry.

The trial in 64 Z., Uitvlugt, was poorly watered until the fourth and fifth months when there was an excess of rain. This was followed by two droughty months, five with ample to excessive rains and two more when it was too dry.

Rainfall on the test in 70 Z. Uitvlugt, was subnormal for the first four months of growth, excessive for the next two and again very dry for two. After that it was normal to excessive.

At Cane Grove, excess of rain above the normal were recorded in both the short (1936-37) and long (1937) wet seasons, but the dry seasons were subnormal.

The topsoil of Field 10 C., Wales, is a very acid pegasse overlying a very acid pegassy clay subsoil. The organic matter in both topsoil and subsoil is very high with a very wide carbon : nitrogen ratio. The salinity of the soil at both depths is low, and the theoretical lime requirement very high.

The topsoil of Field 64 Z., Uitvlugt, is an extremely acid pegassy clay overlying a very highly acid clay subsoil. The organic matter in the topsoil is very high and that in the subsoil high. The carbon : nitrogen ratio of the soil at both depths is wide. The salinity of the topsoil is very high while that of the subsoil is low. The theoretical lime requirements are high.

The topsoil of Field 70 Z., Uitvlugt, is an extremely acid pegasse overlying an extremely acid pegassy clay subsoil. The organic matter in both soils is high with an average carbon : nitrogen ratio. The salinity in the topsoil is very high and that of the subsoil high. The theoretical lime requirement of both soils is high.

The topsoil of Field 36 S.D., Cane Grove, is a very highly acid pegassy clay with a subsoil of similar nature. The organic matter at both depths is high with a wide carbon : nitrogen ratio. The salinity of both topsoil and subsoil is low and the theoretical lime requirements very high.

The results of the individual trials, except that in 36 S.D., Cane Grove, where the treatments differed somewhat, are presented in Table LXXVII and combined in Table LXXVIII.

Figure XXI illustrates the sucrose yield figures from Table LXXVIII.

TABLE LXXVII.

Effects of Various Nitrogenous and Phosphatic Manures on Plant Canes of P.O.J. 2878 on Pegassy Clay.

Fertiliser.	Dose per Acre,		Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
	N, lb.	P_2O_5, lb.					
		Pln.	*Wales, Field 10 Cottage*			(*A*).	
Nitrochalk + B. Slag	141	141	29.74	13.96	4.080	84.3	10.51
Nicifos	141	141	29.23	13.87	4.010	84.9	13.66
Nitrochalk	141	...	25.70	13.42	3.526	83.8	12.53
N. of Soda	141	...	23.83	14.06	3.269	85.4	13.05
S. of Ammonia	141	...	22.72	14.12	3.117	85.8	11.09
Nil	...	...	17.55	12.91	2.408	84.7	13.61
Means	...	...	24.79	13.72	3.402	84.8	12.41
		Pln.	*Wales, Field 10 Cottage*			(*B*).	
Nicifos	141	141	26.33	13.77	3.644	86.5	13.80
Nitrochalk + B. Slag	141	141	24.46	13.43	3.385	86.6	15.18
S. of Ammonia	141	...	22.46	13.94	3.108	87.0	12.11
Nitrochalk	141	...	21.49	14.34	2.974	87.7	11.56
N. of Soda	141	...	20.93	13.75	2.897	86.4	11.40
Nil	...	...	17.86	13.83	2.472	87.0	10.94
Means	...	...	22.25	13.84	3.080	86.9	12.50
		Pln.	*Uitvlugt, Field 64 Zeeburg.*				
S. of Ammonia	141	...	48.84	12.67	6.173	82.3	17.04
Nicifos	141	141	48.63	12.40	6.147	80.0	18.28
N. of Soda	141	...	47.05	12.56	5.947	80.2	16.95
Nitrochalk + B. Slag	141	141	45.12	13.02	5.703	83.6	13.90
Nitrochalk	141	...	44.07	12.33	5.570	81.6	15.49
Nil	...	...	35.37	12.88	4.471	81.8	18.94
Means	...	...	44.85	12.64	5.668	81.6	16.77
		Pln.	*Uitvlugt, Field 70 Zeeburg.*				
Nicifos	141	141	42.75	11.70	5.130	80.4	15.64
Nitrochalk + B. Slag	141	141	41.55	12.21	4.986	81.6	13.52
S. of Ammonia	141	...	40.86	12.07	4.903	81.3	14.56
N. of Soda	141	...	38.89	12.20	4.667	82.6	11.77
Nitrochalk	141	...	38.76	12.37	4.651	81.5	14.20
Nil	...	...	31.21	11.44	3.745	77.1	17.31
Means	...	...	39.00	12.00	4.680	80.7	14.50

TABLE LXXVIII.

Effect of Various Nitrogenous and Phosphatic Manures on Plant Canes of P.O.J. 2878 on Pegassy Clay (Combination of Four Experiments).

Fertiliser.	Dose per Acre,		Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
	N, lb.	P_2O_5, lb.					
Nicifos	141	141	36.74	12.94	4.795	82.9	15.35
Nitrochalk + B. Slag	141	141	35.22	13.16	4.596	84.0	13.28
S. of Ammonia	141	...	33.72	13.20	4.400	84.1	13.70
N. of Soda	141	...	32.68	13.14	4.265	83.6	13.29
Nitrochalk	141	...	32.51	13.12	4.243	83.6	13.45
Nil	...	...	25.50	12.77	3.328	82.6	15.20
Means	...	...	32.73	13.05	4.271	83.5	14.04
S.E. of means	...	...	0.95	...	0.124	...	...
Significant Differences (20 : 1)	...	...	2.86	...	0.373	...	...

'Z' value obtained for effect of fertilisers on tonnage.....=1.7557

„ „ required for P=0.01.....=0.6028

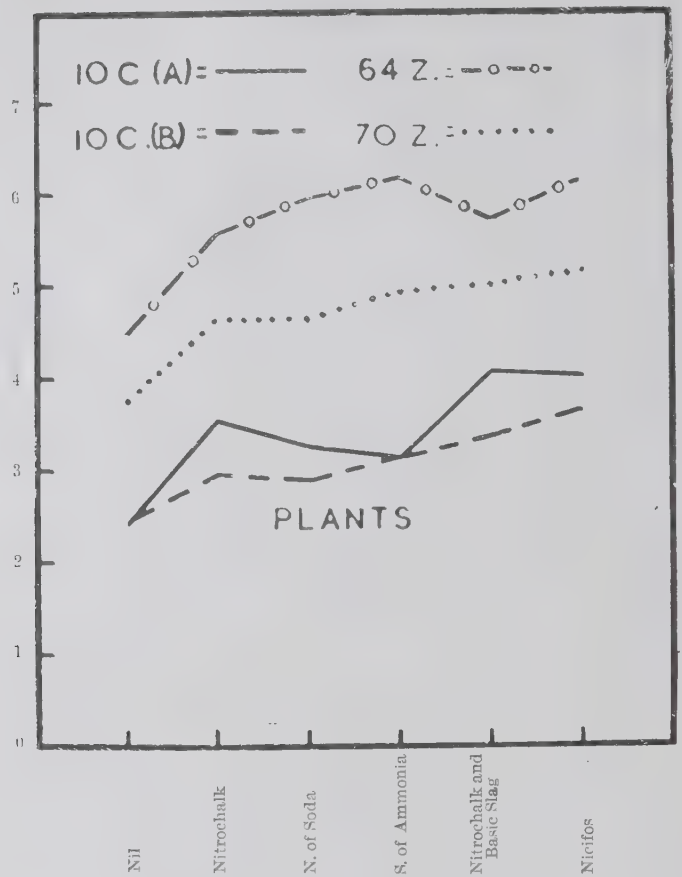


FIG. XXI.

Effects of various Nitrogenous and Phosphatic Manures on Pegassy Clay (Plant Canes: P.O.J. 2878).

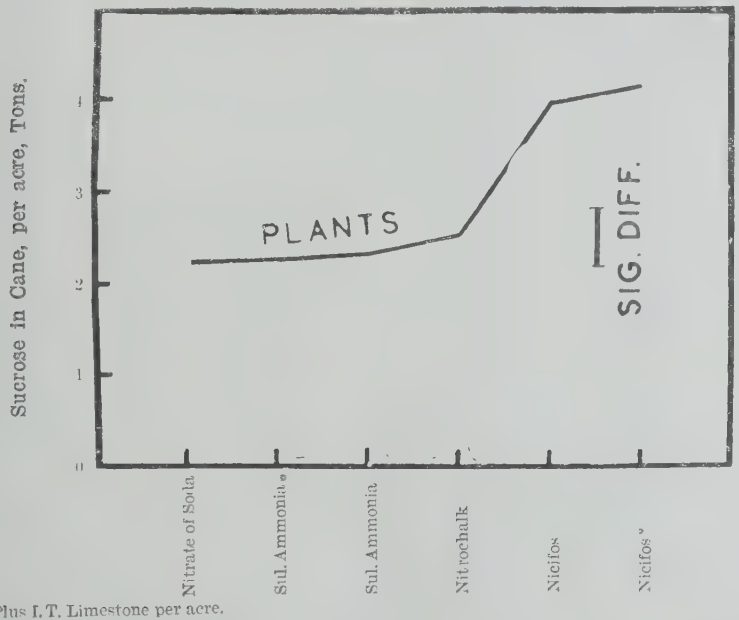
The data from Field 36 S.D., Cane Grove, are presented in Table LXXIX and Figure XXII.

TABLE LXXIX.

Effect of Various Nitrogenous and Phosphatic Manures on P.O.J. 2878 on Pegassy Clay at Pln. Cane Grove.

Fertiliser.	Dose per Acre.		Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
	N, lb.	P_2O_5, lb.					
Nicifos*	141	141	30.58	13.27	4.177	85.4	10.46
Nicifos	141	141	29.22	14.30	3.991	87.0	8.95
Nitrochalk	141	...	18.49	14.38	2.526	87.4	9.67
S. of Ammonia	141	...	17.00	12.88	2.322	83.6	11.35
S. of Ammonia*	141	...	16.73	13.48	2.285	85.6	9.46
N. of Soda	141	...	16.27	13.65	2.222	87.3	9.56
Means	...	...	21.38	13.66	2.920	86.0	9.91
S. E. of means	...	...	1.64	...	0.224	...	...
Significant Differences (20 : 1)	...	...	4.84	...	0.661	...	...

* Plots had an application of pulverised limestone at the rate of one ton per acre.



* Plus I.T. Limestone per acre.

FIG. XXII.

Effect of Nitrogenous and Phosphatic Manures on Pegassy Clay (P.O.J. 2878, Plants).

Considering all the results together, it will be seen that :

Nicifos (Type II, 18 : 18) gave an excellent result in Field 36 S.D., Cane Grove. In Field 10 C. (Experiment A), Wales, it was significantly better than nitrate of soda or sulphate of ammonia. In Experiment B, in the same field, it was significantly better than sulphate of ammonia, nitrochalk alone, or nitrate of soda. In neither instance in Field 10 Cottage, was it significantly different from nitrochalk plus basic slag. In Field 64 Zeeburg, Uitvlugt, Nicifos was not significantly different from any of the other manures tried, but in Field 70 Zeeburg, on the same estate, it was significantly better than nitrate of soda or nitrochalk alone ; it did not however, differ significantly in effect from nitrochalk plus basic slag or sulphate of ammonia alone. Chemical analyses indicate only a trace of phosphate (Truog) in the soil of Field 36 S.D., Cane Grove, and small amounts at the sites of the two trials in Field 10 C., Wales. The soil of Field 70 Z., Uitvlugt, has considerably more phosphate than those of the sites just mentioned but less than that of Field 64 Z. which appears to be amply supplied.

At four out of the five sites, the yields from *Nitrochalk* and sulphate of ammonia were statistically identical. In Field 64 Z., Uitvlugt, however, sulphate of ammonia gave a significantly higher cane yield per acre (4.77 tons) than did nitrochalk. On none of the four occasions on which nitrochalk plus basic slag appeared in comparison with Nicifos was there any significant difference between the yields of the two treatments.

The yields of *Nitrate of Soda* and sulphate of ammonia were statistically the same at all five sites.

The small dressings of limestone in Field 36 S.D., Cane Grove, have had no significant effect upon the crop or its quality.

SUB-SECTION B.—LIMING MATERIALS.

(B 1—B 4) Effect of Liming Materials on Flood-Fallowed Frontland (Second Ratoons).

Fields 31 K., Albion ; 71 B.L., Blairmont ; 16 E.P., Enmore, and 45 O., Ogle.

(*Plant cane results reported in Sugar Bull. No. 5, pp. 88—90.*)
(*First ratoon results reported in Sugar Bull. No. 6, pp. 79—81.*)

At Albion, except for December 1936, rainfall on the trial was subnormal for the first eight months of growth. It was excessive in the months just prior to harvest.

At Blairmont, rains were short during the second, fifth and sixth months after the previous harvest, and again just before the second ratoons were taken off. They were unusually heavy at the third and eighth to tenth months.

At Enmore the total rainfall on the experiment was almost identical with the normal. This was, however, mainly due to the excesses during three months while for most of the time the precipitation was subnormal.

At Ogle, rains were excessive in December and January (1936—37) but subnormal before and after. In the five months prior to harvest they surpassed the normal.

The individual and combined results of the four tests are given in Table LXXX.

TABLE LXXX.

Effect of Liming Materials on Second Ratoons on Flood-Fallowed Frontland.

Applications, per Acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
	Pln. Albion, Field 31 Kilcoy, D. 625.				
Nil	19.40	12.18	2.43	85.6	9.23
½ ton P. limestone	19.58	12.64	2.45	86.9	8.35
1 ton P. limestone	19.34	12.56	2.42	86.1	7.97
½ ton Slaked lime	18.22	12.77	2.28	86.8	8.54
1 ton Slaked lime	20.83	12.45	2.61	85.4	8.34
Means	19.47	12.52	2.44	86.2	8.49
	Pln. Blairmont, Field 71 Bush Lot, D. 625.				
Nil	34.57	13.09	4.55	82.8	14.39
½ ton P. limestone	33.60	13.40	4.43	82.8	16.54
1 ton P. limestone	34.08	12.76	4.49	82.1	14.53
½ ton Slaked lime	34.62	13.72	4.56	82.7	12.91
1 ton Slaked lime	34.28	12.86	4.51	80.8	14.31
Means	34.23	13.17	4.51	82.2	14.54
Pln.	*Enmore, Field 16 East, Paradise, Diamond 10.*				
Nil	32.06	13.93	4.48	88.2	8.53
½ ton P. limestone	30.66	13.76	4.29	88.3	9.40
1 ton P. limestone	31.20	13.71	4.36	88.4	8.09
½ ton Slaked lime	31.59	14.25	4.42	88.9	7.63
1 ton Slaked lime	29.49	14.26	4.12	88.7	6.61
Means	31.00	13.98	4.33	88.5	8.05
	Pln. Ogle, Field 45 Ogle, P.O.J. 2878.				
Nil	29.11	12.94	3.75	86.6	6.47
½ ton P. limestone	27.87	12.74	3.59	86.1	6.78
1 ton P. limestone	30.40	13.40	3.92	86.1	6.57
½ ton Slaked lime	27.41	12.88	3.53	87.8	5.95
1 ton Slaked lime	27.66	12.47	3.57	86.4	6.84
Means	28.49	12.89	3.67	86.6	6.52
	Combination of Four Experiments.				
Nil	28.79	13.04	3.78	85.8	9.66
½ ton P. limestone	27.93	13.13	3.67	86.0	10.27
1 ton P. limestone	28.75	13.11	3.78	85.7	9.29
½ ton Slaked lime	27.96	13.40	3.67	86.5	8.76
1 ton Slaked lime	28.06	13.01	3.69	85.3	9.02
Means	28.30	13.14	3.72	85.9	9.40

The application of liming materials has had no measurable effects on the three crops. It is proposed, after the third ratoon harvest, to repeat the treatments for the next crop cycle and possibly the next with a view to determining the effects of a continuous policy of moderate liming on the yields and the soil reaction.

SUB-SECTION C.—PHOSPHATIC MANURES.

(C 1) Superphosphate of Lime on Flood-Fallowed Frontland (Plant Canes, P.O.J. 2878).

Field 23 R., Port Mourant.

The objects of this trial, the weather it experienced and the soil conditions of the site have already been described in sub-section A (A 1).

The response to the phosphatic applications is shown in Table LXXXI and Figure XXIII.

Table LXXXI.

Effect of Superphosphate of Lime on Plant Canes of P.O.J. 2878 on Flood-Fallowed Frontland at Pln. Port Mourant.

Superphosphate, Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
0	45.43	14.53	6.759	89.7	5.54
3	46.26	13.88	6.457	88.9	5.21
6	47.86	14.54	6.764	89.7	4.84
Means	46.52	14.32	6.660	89.4	5.20
S. E. of means	...	0.15	0.070	...	...
Significant Differences (20 : 1)	...	0.45	0.209	...	...

It will be seen that the only definite effect has been a peculiar one on the sucrose content of the cane which is lower for 3 cwt. superphosphate per acre than for none or for 6 cwt. per acre. A somewhat similar detrimental effect on the glucose ratio was found in the plant cane results from Field 26 Rp., Blairmont, reported on p. 82 of *Sugar Bulletin* No. 6.

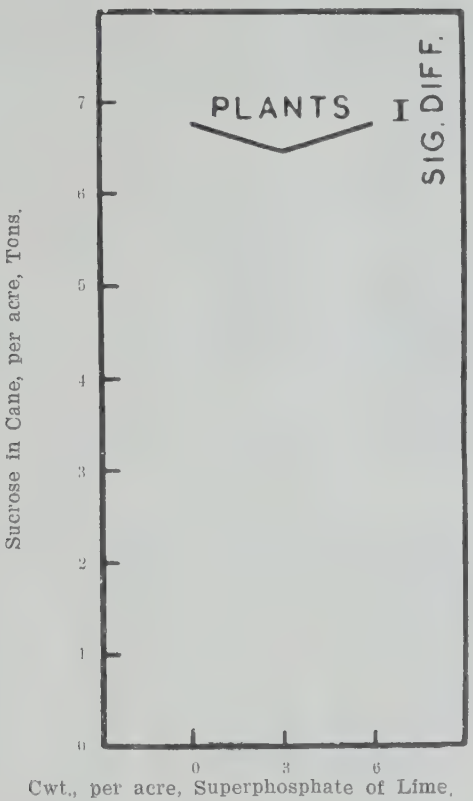


FIG. XXIII.

Effect of Superphosphate of Lime on Flood-Fallowed Frontland (P.O.J. 2878: Plant Canes).

Statistical examination of the data also shows that there was a definite interaction between superphosphate of lime and sulphate of potash as regards the sucrose content of the cane. This is brought out in Table LXXXII.

TABLE LXXXII.

Interaction of Superphosphate of Lime and Sulphate of Potash on Plant Canes of P.O.J. 2878 on Flood-Fallowed Frontland.

	Sucrose % Cane.	
	High Potash.	No Potash.
High Phosphate	15.06	14.31
No Phosphate	14.08	14.71
Difference due to high Phosphate	0.98	−0.40

'Z' value obtained for interaction ..... —0.9535
„ „ required for P = 0.05 ..... —0.7568

The deduction of practical importance is that high doses of potash will adversely affect the sucrose content of the cane unless accompanied by high doses of phosphate.

C 2—C 3) Superphosphate of Lime on Flood-Fallowed Frontland (First Ratoons, P.O.J. 2878).

Fields 81 R.H., Rose Hall and 26 Rp., Blairmont.

(Plant cane results reported in Sugar Bull. No. 6, p. 82.)

The weather conditions, etc., affecting these trials have already been discussed in sub-section A (A 2—A 3).

The effects of the superphosphate applications are shown for each trial in Table LXXXIII and for Field 81 R.H. in Figure XXIV.

Table LXXXIII.

Effect of Superphosphate of Lime on First Ratoons of P.O.J. 2878 on Flood-Fallowed Frontland.

Superphosphate, Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
	Pln.	*Rose Hall,*	*Field 81*	*Rose Hall.*	
0	33.34	12.36	4.324	84.2	7.88
3	36.12	12.58	4.400	86.3	6.73
6	35.48	13.42	4.694	86.3	6.83
Means	34.98	12.79	4.473	85.6	7.15
S.E. of means	...	0.26	0.091	...	...
Significant Differences (20 : 1)	...	0.78	0.273	...	...
	Pln.	*Blairmont,*	*Field 26*	*Rampoor.*	
0	31.60	15.02	...	85.9	9.51
3	32.91	14.65	...	84.6	8.20
6	33.96	14.88	...	84.9	8.71
Means	32.82	14.85	4.874	85.1	8.81
S.E. of means	...	...	...	...	...
Significant Differences (20 : 1)	...	...	...	...	...

At Rose Hall there has been an improvement in the sucrose content of the cane with increasing doses of superphosphate, 6 cwt. being definitely better than either 3 cwt. or none. The increased yield of sugar due to improved cane quality would be likely to cover, with a slight favourable margin, the cost of the fertiliser.

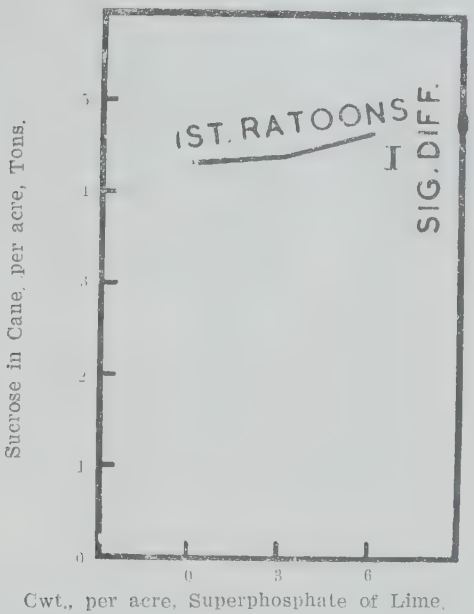


FIG. XXIV.

Effect of Superphosphate of Lime on Flood-Fallowed Frontland (P.O.J. 2878: First Ratoons).

At Blairmont the phosphatic applications were without definite effect on the yield of cane, its sucrose content, the juice purity or the glucose ratio.

(C 4) Basic Slag on Pegassy Clay

(Plant Canes, P.O.J. 2878.)

Field 4 P., Cane Grove.

The objects of this trial and the weather and soil conditions affecting it have already been discussed in sub-section A (A 9).

The results of the phosphate treatments are shown in Table LXXXIV.

Table LXXXIV.

Effect of Basic Slag on Plant Canes of P.O.J. 2878 on Pegassy Clay at Pln. Cane Grove.

Basic Slag, Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
0	38.36	13.59	...	85.5	14.38
5	38.45	13.52	...	84.3	15.25
10	37.70	13.55	...	84.8	14.17
Means	38.17	13.55	5.172	84.9	14.60
S.E. of means	...	...	...	...	...
Significant Differences (20 : 1)	...	...	...	...	...

The applications of Basic slag were without definite effect on the yield of cane, its sucrose content, the juice purity or the glucose ratio.

(C 5—C 9) Nitrogenous and Phosphatic Manures on Pegassy Clay

(Plant Canes, P.O.J. 2878).

Fields 10 C., (A & B) Wales; 64 and 70 Z., Uitvlugt; and 36 S.D., Cane Grove.

The data from these trials have been presented in sub-section A (A 12—A 16).

(C 10) Basic Slag on Pegassy Clay

(First Ratoons, P.O.J. 2878).

Field 31 E., Uitvlugt.

(*Plant cane results reported in Sugar Bull. No. 6, p. 84.*)

Rainfall conditions affecting this trial have been described in sub-section A (A 10).

It will be seen from Table LXXXV that the dressings of basic slag have been without significant effect on the yield of cane, its sucrose content, the juice purity or the glucose ratio.

TABLE LXXXV.

Effect of Basic Slag on First Ratoons of P.O.J. 2878 on Pegassy Clay.

Basic Slag, Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
0	38.79	14.29	...	89.1	5.46
5	39.65	15.04	...	89.5	5.22
10	38.57	14.52	...	88.5	5.62
Means	39.00	14.62	5.702	89.0	5.43
S.E. of means	...	...	...	...	...
Significant Differences (20 : 1)	...	...	...	...	...

(C 11) SUPERPHOSPHATE OF LIME ON PEGASSY CLAY (THIRD RATOONS, P.O.J. 2878).

Field 53 M., Cane Grove.

(*Plant cane results reported in Sugar Bull. No. 4, pp. 92-93.*)

(*First ratoon results reported in Sugar Bull. No. 5, pp. 91-93.*)

(*Second ratoon results reported in Sugar Bull. No. 6, pp. 85-86.*)

The third ratoon results and the combined data from four crops are presented in Table LXXXVI and Figure XXV.

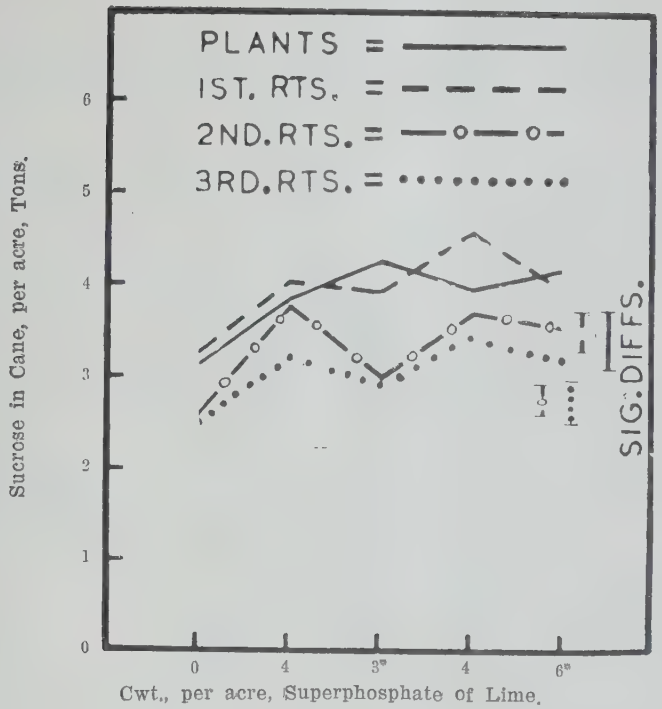
During most of its growth this trial experienced an abnormally high rainfall. The total excess amounted to 44.74 inches.

TABLE LXXXVI.

Immediate and Residual Effects of Superphosphate of Lime on P.O.J. 2878 on Pegassy Clay at Pln. Cane Grove.

Superphosphate, Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
		Third Ratoons.			
Nil	16.33	15.28	2.528	91.5	3.11
3 cwt. plants only	18.87	15.27	2.921	91.4	3.55
6 „ „ „	20.67	15.69	3.200	91.5	3.59
2 „ „ and ratoons	20.96	15.72	3.245	92.2	3.38
4 „ plants and ratoons	22.34	15.42	3.458	90.7	3.70
Means	19.83	15.48	3.070	91.5	3.47
S.E. of means	1.03	...	0.159	...	...
Significant Differences (20 : 1)	3.17	...	0.491	...	...
		Four Crops.			
Nil	76.77	15.07	11.661	89.4	6.44
3 cwt. plants only	93.01	15.03	14.128	89.6	5.95
6 „ „ „	97.82	15.34	14.859	90.2	5.48
2 „ „ and ratoons	98.68	15.32	14.989	90.0	5.52
4 „ plants and ratoons	103.86	15.18	15.776	89.6	5.62
Means	94.03	15.19	14.283	89.8	5.80
S. E. of means	4.84	...	0.735	...	0.22
Significant Differences (20 : 1)	13.98	...	2.124	...	0.62

	Third Ratoons	Four Crops
'Z' value obtained for effect of superphosphate on tonnage.....	=0.8087	1.5676
„ „ „ „ „ „ „ „ glucose ratio	= ...	0.6139
„ „ required for P=0.01.....	=0.8443	0.6472
„ „ „ „ P=0.05.....	=0.5907	0.4632



*Plant only

FIG. XXV.

Effect of Superphosphate of Lime on Pegassy Clay (P.O.J. 2878 : Plants, First, Second and Third Ratoons.).

It is obvious that the area will respond to phosphatic dressings and that these may be expected to increase the yield of cane and improve the glucose ratio of the juice. There is no statistical difference between the yields of the various phosphatic treatments but there is some suggestion that 6 cwt. basic slag per acre at planting only would be the most economic and convenient of those tried.

SUB-SECTION D.—POTASSIC MANURES.

(D 1) Sulphate of Potash on Flood-Fallowed Frontland (Plant Canes, P.O.J. 2878).

Field 23 R., Port Mourant.

The objects of this trial and the rainfall and soil conditions affecting it have been discussed in sub-section A (A 1).

The effects of the potassic dressings are shown in Table LXXXVII.

Table LXXXVII.

Effect of Sulphate of Potash on Plant Canes of P.O.J. 2878 on Flood-Fallowed Frontland at Pln. Port Mourant.

S/P., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
0	43.90	14.25	...	89.6	5.31
2	49.65	14.36	...	89.5	5.18
4	46.01	14.34	...	89.2	5.10
Means	46.52	14.32	6.662	89.4	5.20
S.E. of means	...	...	...	...	...
Significant Differences (20 : 1)	...	...	...	...	...

The dressings of sulphate of potash used had no definite effect on the yield of cane, the sucrose content, the juice purity or the glucose ratio.

(D 2-D 3) Sulphate of Potash on Flood-Fallowed Frontland. (First Ratoons, P.O.J. 2878).

Fields 81 R.H., Rose Hall and 26 Rp., Blairmont.

(Plant cane results reported in Sugar Bull. No. 6, p. 87.)

These trials have been already discussed in sub-section A (A 2–A 3).

The effects of the potassic treatments are given in Table LXXXVIII.

TABLE LXXXVIII.

Effect of Sulphate of Potash on First Ratoons of P.O.J. 2878 on Flood-Fallowed Frontland.

S/P., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
	Pln. Rose Hall, Field 81			*Rose Hall.*	
0	35.27	12.80	...	85.7	7.70
2	35.31	12.68	...	85.4	6.52
4	34.36	12.88	...	85.7	7.22
Means	34.98	12.79	4.473	85.6	7.15
S.E. of means	...	...	...	...	...
Significant Differences (20 : 1)	...	...	...	...	...
	Pln. Blairmont, Field 26			*Rampoor.*	
0	31.97	14.89	...	85.9	8.17
2	32.38	14.70	...	84.9	8.40
4	34.11	14.96	...	84.6	9.85
Means	32.82	14.85	4.874	85.1	8.81
S.E. of means	...	...	...	...	...
Significant Differences (20 : 1)	...	...	...	...	...

At neither site have the applications of sulphate of potash had any definite effect on the yield of cane, its sucrose content, the juice purity or the glucose ratio.

(D 4) SULPHATE OF POTASH ON PEGASSY CLAY (PLANT CANES, P.O.J. 2878).

Field 4 P., Cane Grove.

The rainfall and soil conditions affecting this trial and its objects have been dealt with in sub-section A (A 9).

It will be seen from Table LXXXIX that the potassic dressings have been without definite effect on the yield of cane, its sucrose content, the juice purity or the glucose ratio.

TABLE LXXXIX.

Effect of Sulphate of Potash on Plant Canes of P.O.J. 2878 on Pegassy Soil at Pln. Cane Grove.

S/P., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
0	36.65	13.41	...	84.2	15.12
2	39.14	13.64	...	84.9	14.20
4	38.73	13.61	...	85.5	14.48
Means	38.17	13.55	5.172	84.9	14.60
S.E. of means	...	...	...	...	...
Significant Differences (20 : 1)	...	...	...	...	...

Statistical examination of the results revealed, however, a definite interaction between sulphate of potash and sulphate of ammonia in regard to glucose ratio, as shown in Table XC.

TABLE XC.

Interaction of Sulphate of Potash and Sulphate of Ammonia on Plant Canes of P.O.J. 2878 on Pegassy Clay.

	Glucose Ratio.	
	Low Nitrogen.	High Nitrogen.
High Potash	16.39	12.49
No Potash	13.40	16.88
Difference due to high Potash	2.99	−4.39

'Z' value obtained for interaction ..... = 0.8631
„ „ required for P = 0.05 ..... = 0.7568

It appears that the detrimental effects of high nitrogen applications on the glucose ratio can be offset by high potassic dressings. These latter, on the other hand, tend to raise the glucose ratio if the nitrogen supply is low.

(D 5) Sulphate of Potash on Pegassy Clay (First Ratoons, P.O.J. 2878).

Field 31 E., Uitvlugt.

(Plant cane results reported in Sugar Bull. No. 6, p. 87.)

Rainfall conditions affecting this trial have been discussed under A 10 in sub-section A.

It will be seen from Table XCI that sulphate of potash has had no significant effect on the yield of cane, its sucrose content, the juice purity or the glucose ratio. There was, however, a significant interaction on the yield of cane between sulphate of ammonia and sulphate of potash and this has been discussed in sub-section A (A 10).

Table XCI.

Effect of Sulphate of Potash on First Ratoons of P.O.J. 2878 on Pegassy Clay at Pln. Uitvlugt.

S./P., Cwt./acre.	Cane, Tons/acre.	Sucrose, % Cane.	Sucrose, Tons/acre.	Juice Purity.	Glucose Ratio.
0	39.16	14.50	...	88.4	5.67
2	37.64	14.48	...	88.9	5.64
4	40.22	14.87	...	89.9	4.98
Means	39.01	14.62	5.703	89.1	5.43
S.E. of means	...	...	...	...	...
Significant Differences (20 : 1)	...	...	...	...	...

SUB-SECTION E.—DISCUSSION AND SUMMARY.

Nitrogenous Fertilisers.

Frontland.

The experiments reported in this Bulletin confirm and amplify the results previously reported. Many estates have already adopted the applications of sulphate of ammonia recommended and their action has reflected in higher imports of the manure and increased yields. *Those who have not yet altered their policy are strongly advised to use 2 cwt. sulphate of ammonia per acre on the plant canes and 4 cwt. per acre on the first, second and third ratoons.*

Pegassy Clay.

There is increasing evidence that canes on this soil type can profitably use more nitrogen per acre than canes on the frontland and it is likely that 120 lb. nitrogen per acre, or even more, would be a sound application. In the form of sulphate of ammonia, however, this would mean 6 cwt. per acre, and one hesitates to advise the use of such large quantities of an acidifying fertiliser on soils which are already markedly acid, unless they are to be accompanied by one or preferably two tons limestone per acre for each cycle.

On the other hand, trials with nitrate of soda and nitrochalk have indicated that there is little to choose between these and sulphate of ammonia for plant canes on this soil type and, if further evidence of this is secured, it may be possible to advise the replacement of sulphate of ammonia by these non-acidifying products.

In areas where phosphates are deficient, Nicifos has given promising indications but there is no evidence that it is more efficient than sulphate of ammonia and basic slag or nitrochalk and basic slag, and in acid soils the last combination may, in the long run, prove more satisfactory.

Liming Materials.

It has been established that within thirty years there has been a hundredfold increase in the acidity of the Colony's cane soils generally, and that considerable areas are already below pH 5. Furthermore, the major portion of the cane area consists of heavy-textured clays and silts. In these circumstances it might be expected that the application of lime or limestone would be a sound economic procedure. Unfortunately, there are no suitable local sources of these products and they have to be imported from Trinidad and Barbados at a cost, landed on the estate (1937), of $11.55 per ton for lime and $10.18 per ton for limestone. At these rates and the present price of sugar, there can be no question of liming the soils back to neutrality and, indeed, there is but little evidence that yields would be enhanced by so doing.

On the other hand, the use of sulphate of ammonia is on the increase and it has been determined that the treatments now advised, and already widely adopted, will bring about marked and statistically significant increases in acidity in a single crop-cycle of four years. Unfortunately too, there is evidence available that the condition is not completely offset, as some had hoped, by the period of flood-fallow following the last harvest.

None can predict the future with any certainty but there is reason for fearing that, with the increased use of sulphate of ammonia, the rate of acidification may be accentuated and that many of the soils may reach in another twenty or thirty years a point below the critical pH at which cane can be successfully grown. On the clay areas there is hardly any evidence that they are near that point for, despite increasing acidity, yields have tended, with the use of new varieties, flood-fallowing and a better fertiliser policy, to climb in recent years. On the pegassy areas, however, some fields appear to have reached the critical point.

Many estates apply half to one ton of lime or limestone at each replanting and, although there is no evidence of increased yields to support the practice, planters have been advised to continue and/or adopt it as an insurance against the soil reaching the critical pH and a chemical condition which it may be very costly or almost impossible to reverse. Experiments, designed to estimate the value of this long term policy of moderate liming, are reported on in this Bulletin. They will have to be continued for many years yet.

Experiments are being conducted with non-acidifying nitrogenous manures and with basic slag on frontland clays as a substitute for superphosphate, and it is hoped that an alternative may be found along these lines, but a great deal more information must be accumulated before a pronouncement can be made. In the meantime *it is urged that estates continue the small doses of limestone to their replanted fields, and pegassy areas, in particular, should not be neglected in this respect.*

Phosphatic Manures.

Frontland.

In the course of the past few years, eight experiments involving phosphatic applications have been conducted on this soil type. The phosphate content of the topsoils of the experimental sites, as determined in the laboratory, ranged from 31 to 133 parts per million of P_2O_5 soluble in 1% citric acid, with only one instance when the figure was over 82, and from a trace to 82 parts per million of available P_2O_5 by the Truog method. In no instance has there been a significant response to phosphate in the yield of cane, and there have been significant effects upon the quality of the cane in four experiments only, *viz.* :—

Field 15 H.P., Blairmont.

The topsoil of this field yielded 133 p.p.m. of 'citric-soluble' and 35 p.p.m. of 'Truog' P_2O_5. Only plant canes were harvested and phosphatic applications had a significant and beneficial effect on the sucrose content of the cane, its glucose ratio and juice purity.

Field 81 R.H., Rose Hall.

The topsoil of this field yielded 56 p.p.m. of 'citric-soluble' and 30 p.p.m. of 'Truog' P_2O_5. Plant canes and first ratoons have been harvested. In the former phosphatic applications had no effect, but in the latter they had a beneficial effect upon the sucrose content of the cane.

Field 26 Rp., Blairmont.

The topsoil of this field yielded 36 p.p.m. of 'citric-soluble' and 82 p.p.m. of 'Truog' P_2O_5. Plant canes and first ratoons have been reaped. In the former a medium dressing of superphosphate had a deleterious effect on the glucose ratio while a heavy dressing had no effect. In the first ratoons phosphates have had no significant effects of any kind.

Field 23 R., Port Mourant.

The topsoil of this field yielded 23 p.p.m. 'citric-soluble' and a trace of of 'Truog' P_2O_5. Only plant canes have been harvested and in these a medium dose of superphosphate had a deleterious effect on the sucrose content of the cane while a heavy dose had no effect.

It is obvious that much more work remains to be done before any pronouncement can be made in connection with the use of phosphatic fertilisers on frontland clays and silts.

Pegassy Clay.

Nine experiments involving phosphatic applications have been executed on pegassy clay ; in six of the nine there has been a significant effect on the yields of cane, in one only on its quality. The topsoil of these sites has yielded from 26 to 692 p.p.m. 'citric-soluble' and from a trace to 200 p.p.m. of 'Truog' P_2O_5.

Here again nothing more definite can be said than that pegassy soils appear to respond to phosphatic fertilisers more readily than do frontland clays and silts.

Potassic Manures.

Frontland.

Experiments involving potassic dressings have been made at four sites where the potash content of the topsoil (mg. eq. / 100 gm.) varied from 0.20 to 0.37. In no case was there any definite effect on the yield of cane but at one site there was a definite and beneficial residual effect on the sucrose content of the cane and the glucose ratio in the second ratoons, following a heavy potassic application to the plants. In another case a medium dose of potash increased the glucose ratio in the plant canes while heavy dressings diminished it.

In view of the above, no recommendations can be made with regard to potassic applications on frontland soils.

Pegassy Clay.

Three tests involving potassic manures have been carried out on pegassy areas whose topsoil potash content (mg. eq. / 100 gm.) varied from 0.17 to 0.47. In two instances there was a definite yield response and in one of these the sucrose content of the cane and the juice purity were favourably affected.

Further experiments have been started on this soil type and a pronouncement must await the accumulation of more data.

FLOOD-FALLOWING TRIALS.

A general description of the objects and a record of the plant cane, first ratoon and second ratoon yields of two experiments with flood-fallowing at Pln. Port Mourant were given in *Sugar Bulletins* No. 4 (pp. 96—104), No. 5 (pp. 101—107) and No. 6 (pp. 95—101). One of these trials was continued as third ratoons and the results are here presented.

A duplicate set of trials was established at Pln. Lusignan but they were severely damaged by floods. They were re-established but one of the two was again very adversely affected by unusual weather and its plant cane results were considered too abnormal for publication. Though not quite normal, the first ratoon yield was somewhat better and the data are presented later in this section. The other experiment at Lusignan will be harvested as plant canes in the Autumn of 1938.

Flood-Fallowing Experiment in Field 28 T.L., Pln. Port Mourant.

Treatments :—

(a) Grass-fallowed for 12 months, not flood-fallowed ;

(b) „ „ „ 8 „ , flood-fallowed for 4 months ;

(c) Grass-fallowed for 6 months, flood-fallowed for 6 months ;

(d) Not grass-fallowed, flood-fallowed for 12 months.

Half plots were treated with ground limestone before and after flooding.

The third ratoons were reaped on 24th March, 1938.

Except for the month just after harvest of the second ratoons and the sixth and seventh months of growth, all of which were very dry, rains were abnormally high on the third ratoons and a total excess of 35.97 inches was registered.

Treatments had a definite effect on the sucrose content of the cane but no statistically significant effect on the yield of cane, the juice purity or the glucose ratio.

The yields of sucrose per acre for the third ratoon crop and the totals for four crops are given in Table XCII and presented graphically in Figure XXVI.

TABLE XCII.

Effects of Duration of Flooding and Time of Application of Limestone on Yield of Sucrose, Tons per Acre.

Duration of Flooding.	1 Ton Ground Limestone per Acre,					
	Before Flooding.		After Flooding.		Means.	
	3rd Ratoons.	Total, 4 Crops.	3rd Ratoons.	Total, 4 Crops.	3rd Ratoons.	Total, 4 Crops.
No flooding	3.650	15.734	3.859	17.997	3.754	16.865
4 months	3.961	20.501	3.568	19.085	3.764	19.793
6 months	3.791	21.691	3.732	20.473	3.761	21.082
12 months	3.791	22.200	3.819	22.157	3.805	22.178
Means	3.798	20.031	3.744	19.928	3.771	19.979

Table XCIII presents the third ratoon yields for the major issues involved in the trial.

TABLE XCIII.

Interaction of Time of Application of Limestone and Flooding vs. No Flooding.

	Sucrose, Tons per Acre,	
	No Flooding.	Flooding.
Limestone before fallow	3.650	3.848
Limestone after ,,	3.859	3.706

'Z' value obtained for effect of interaction on sucrose content ... =0.8171

'Z' value required for P=0.05 ... ... =0.8163

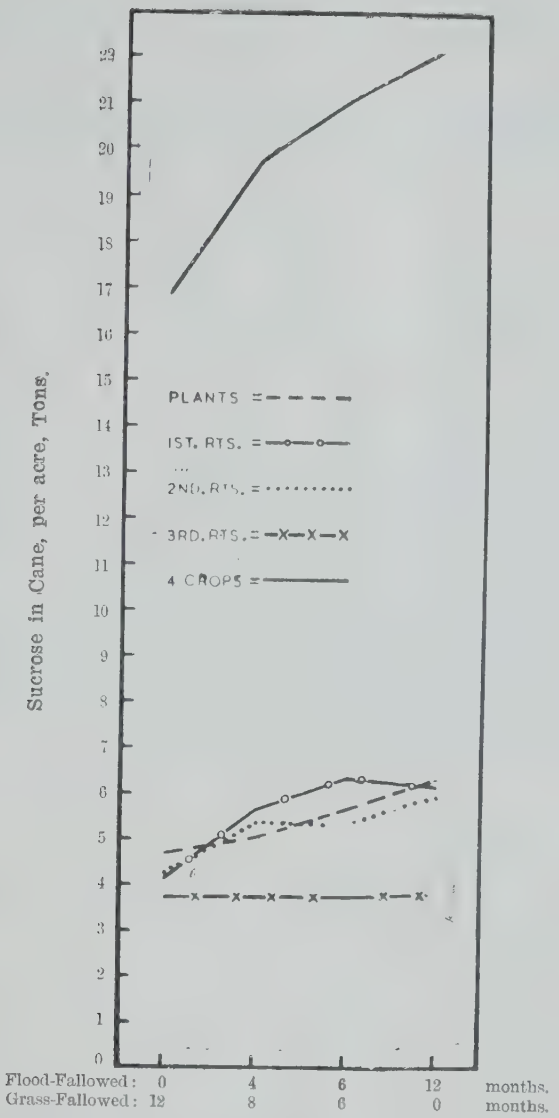


FIG. XXVI.

Effect of Duration of Flood-Fallow.

Table XCIV presents a similar arrangement of the combined results for four crops.

TABLE XCIV.

Effects of Limestone, before and after Fallow, in Presence and Absence of Flooding, on the Yield of Sucrose, Tons per Acre, (Totals of Four Crops).

	No Flooding.	Flooding.
Limestone before fallow	15.734	21.464
Limestone after ,,	17.997	20.572
Means	16.865	21.018

This experiment, which is now closed, has yielded some important indications, suggesting, for example, that the longer the period of flood-fallow the more beneficial will be the results and that when there is no flooding during the fallow period limestone should be applied just before planting, whereas, if flooding is to be done, it should be applied at the commencement of the fallow. Confirmation of these findings is urgently needed but estates have been reluctant to undertake the trouble and expense of a trial of this nature. It is pleasing to record, however, that a replicate has been started at Pln. Lusignan and another at Pln. Providence, (E.B., Demerara). An important consideration which it is hoped will be cleared up by these new tests is the question of the economics, in areas where land is not over-abundant, of immobilising fields for long periods in the hope of getting enhanced results from the flood-fallow.

FLOOD-FALLOWING EXPERIMENT IN FIELD H., PLN. LUSIGNAN.

The treatments were :—

(a) Flooded for 6 months at a minimum depth of 12 inches ;

(b) Flooded for 6 months at a minimum depth of 12 inches, plus 5 tons molasses per acre ;

(c) Flooded for 6 months at a minimum depth of 12 inches, plus floating aquatic vegetation ;

(d) Flooded for 6 months at a minimum depth of 3 inches, with a growth of semi-aquatic weeds and bush.

Owing to unfavourable weather, the plant cane crop was so abnormally poor that it was decided to discard the data it yielded. The first ratoon yields, here considered, were better but still unsatisfactory.

An excess of 38.48 inches of rain over the normal fell on the trial and only during three months (the first, eighth and ninth) was it below what might have been expected.

Treatments had no definite effect on the yield of cane, its sucrose content, the juice purity or the glucose ratio. It will be seen from Table XCV that there is some suggestion that treatments (c) and, to a lesser extent, (d) were superior to the others.

TABLE XCV.

Effect of Various Types of Flood-Fallow on the Yield of First Ratoons.

Treatments.	Cane, Tons/acre.	Sucrose, % Cane.	Juice Purity.	Glucose Ratio.	Sucrose Tons/acre.
(a)	17.21	12.28	85.7	6.94	2.11
(b)	17.67	12.74	86.7	5.88	2.25
(c)	22.42	13.05	87.6	6.61	2.93
(d)	20.08	12.47	86.6	5.94	2.50
Means	19.34	12.63	86.6	6.34	2.45

So far as the beneficial effects of encouraging floating vegetation go, the trend of these figures confirms the first ratoon results from Field 28 T.W., Port Mourant (*Sugar Bulletin* No 5, pp. 101—102). At Port Mourant, however, treatments (a) and (d) were at the bottom of the first ratoon list whereas in this case treatment (d) is second and the molasses of treatment (b) appears to have had no effect.

APPENDIX I.—RAINFALL DATA.

Rainfall at Sophia Experiment Station.

Month.	Rainfall 1936-1937, Inches.	Average Rainfall 1921-1937, Inches.	Excess or Deficit During Growth of the Various Experiments.									
			Field 5 East, A,C,E.	Field 2 West. A,B,C,D.	Field 4 West. A,B,C,D.	Fields 2, 3 & 17 East & 15 West.	Field 16 East, A,B,C.	Field 14 East.	Field 3 West.	Field 16 West.	Field 8 East, A,B.	Field 6 West.
May 1936	15.28	11.80	+ 3.48									
June	13.92	14.45	− 0.53									
July	11.91	11.16	+ 0.75	+ 0.75								
August	1.76	8.10	− 6.34	− 6.34	− 6.34							
September	1.05	2.69	− 1.64	− 1.64	− 1.64	− 1.64	− 1.64					
October	3.79	3.99	− 0.20	− 0.20	− 0.20	− 0.20	− 0.20	− 0.20	− 0.20			
November	4.04	5.65	− 1.61	− 1.61	− 1.61	− 1.61	− 1.61	− 1.61	− 1.61	− 1.61	− 1.61	− 1.61
December	23.04	14.56	+ 8.48	+ 8.48	+ 8.48	+ 8.48	+ 8.48	+ 8.48	+ 8.48	+ 8.48	+ 8.48	+ 8.48
January 1937	14.63	8.91	+ 5.72	+ 5.72	+ 5.72	+ 5.72	+ 5.72	+ 5.72	+ 5.72	+ 5.72	+ 5.72	+ 5.72
February	0.75	3.69	− 2.94	− 2.94	− 2.94	− 2.94	− 2.94	− 2.94	− 2.94	− 2.94	− 2.94	− 2.94
March	1.53	4.19	− 2.66	− 2.66	− 2.66	− 2.66	− 2.66	− 2.66	− 2.66	− 2.66	− 2.66	− 2.66
April	5.19	5.25	− 0.06	− 0.06	− 0.06	− 0.06	− 0.06	− 0.06	− 0.06	− 0.06	− 0.06	− 0.06
May	13.09	11.80	+ 1.29	+ 1.29	+ 1.29	+ 1.29	+ 1.29	+ 1.29	+ 1.29	+ 1.29	+ 1.29	+ 1.29
June	19.95	14.45	+ 5.50	+ 5.50	+ 5.50	+ 5.50	+ 5.50	+ 5.50	+ 5.50	+ 5.50	+ 5.50	+ 5.50
July	19.70	11.16	+ 8.54	+ 8.54	+ 8.54	+ 8.54	+ 8.54	+ 8.54	+ 8.54	+ 8.54	+ 8.54	+ 8.54
August	8.23	8.10	+ 0.13	+ 0.13	+ 0.13	+ 0.13	+ 0.13	+ 0.13	+ 0.13	+ 0.13	+ 0.13	+ 0.13
			+17.91	+14.96								
September	2.61	2.69			− 0.08	− 0.08	− 0.08	− 0.08	− 0.08	− 0.08	− 0.08	− 0.08
						+20.47			+22.11			+22.31
October	4.57	3.99			+ 0.58		+ 0.58	+ 0.58		+ 0.58	+ 0.58	
					+14.71		+21.05				+22.89	
November	3.60	5.65						− 2.05		− 2.05		
								+20.64		+20.84		

RAINFALL AT SOPHIA EXPERIMENT STATION.—(*Contd.*)

Month.		Rainfall 1936—1938, Inches.	Average Rainfall 1921–1937, Inches.	Excess or Deficit during Growth of the Various Experiments.				
				Fields 5, 7, 8, & 9 West, & 9 East, A.B.	Field 13 East.	Field 13 West.	Fields 1 East, A,B,C,D & 10 East.	Field 4 East.
December	1936	23.04	14.56	+ 8.48				
January	1937	14.63	8.91	+ 5.72				
February		0.75	3.69	− 2.94	− 2.94			
March		1.53	4.19	− 2.66	− 2.66	− 2.66	− 2.66	
April		5.19	5.25	− 0.06	− 0.06	− 0.06	− 0.06	
May		13.09	11.80	+ 1.29	+ 1.29	+ 1.29	+ 1.29	+ 1.29
June		19.95	14.45	+ 5.50	+ 5.50	+ 5.50	+ 5.50	+ 5.50
July		19.70	11.16	+ 8.54	+ 8.54	+ 8.54	+ 8.54	+ 8.54
August		8.23	8.10	+ 0.13	+ 0.13	+ 0.13	+ 0.13	+ 0.13
September		2.61	2.69	− 0.08	− 0.08	− 0.08	− 0.08	− 0.08
October		4.57	3.99	+ 0.58	+ 0.58	+ 0.58	+ 0.58	+ 0.58
November		3.60	5.65	− 2.05	− 2.05	− 2.05	− 2.05	− 2.05
December		12.76	14.56	+22.45	− 1.80	− 1.80	− 1.80	− 1.80
January	1938	13.72	8.91		+ 4.81	+ 4.81	+ 4.81	+ 4.81
February		14.20	3.69		+10.51	+10.51	+10.51	+10.51
March		14.76	4.19		+21.77	+10.57	+24.71	+10.57
April		8.94	5.25			+35.28		+ 3.69
								+41.69

RAINFALL AT PLANTATION SKELDON.

Month.		Rainfall 1936—1937, Inches.	Average Rainfall 1906—1937, Inches.	Excess or Deficit during Growth of the Various Experiments.
				Fields 7 E.M., 8E.M. & 8Sp.
October	1936	0.85	3.10	− 2.25
November		4.84	3.84	+ 1.00
December		9.50	7.21	+ 2.29
January	1937	7.95	6.82	+ 1.13
February		1.15	4.53	− 3.38
March		3.16	5.62	− 2.46
April		8.86	6.10	+ 2.76
May		14.48	10.13	+ 4.35
June		23.93	10.93	+13.00
July		10.39	9.25	+ 1.14
August		5.09	6.20	− 1.11
September		0.35	2.71	− 2.36
				+14.11

RAINFALL AT PLANTATION PORT MOURANT.

Month.		Rainfall 1936—1938, Inches.	Average Rainfall 1880—1937, Inches.	Excess or Deficit during Growth of the Various Experiments.				
				Field 23 R.	Field 7 A.W.A,B.	Field 15 A.O.L.	Field 11 T.L.	Field 28 T.L.
August	1936	4.32	5.18	− 0.86	− 0.86			
September		0.22	1.77	− 1.55	− 1.55			
October		0.83	1.75	− 0.92	− 0.92	− 0.92		
November		1.40	3.34	− 1.94	− 1.94	− 1.94		
December		12.71	7.76	+ 4.95	+ 4.95	+ 4.95	+ 4.95	
January	1937	4.85	6.60	− 1.75	− 1.75	− 1.75	− 1.75	
February		1.03	4.92	− 3.89	− 3.89	− 3.89	− 3.89	
March		1.45	5.01	− 3.56	− 3.56	− 3.56	− 3.56	− 3.56
April		6.27	5.50	+ 0.77	+ 0.77	+ 0.77	+ 0.77	+ 0.77
May		12.46	9.05	+ 3.41	+ 3.41	+ 3.41	+ 3.41	+ 3.41
June		18.24	9.29	+ 8.95	+ 8.95	+ 8.95	+ 8.95	+ 8.95
July		11.90	7.91	+ 3.99	+ 3.99	+ 3.99	+ 3.99	+ 3.99
August		4.41	5.18	+ 7.60	− 0.77	− 0.77	− 0.77	− 0.77
September		0.86	1.77		+ 6.83	− 0.91	− 0.91	− 0.91
October		2.95	1.75			+ 1.20	+ 1.20	+ 1.20
November		3.70	3.34			+ 0.36	+ 0.36	+ 0.36
December		8.30	7.76			+ 9.89	+12.75	+ 0.54
January	1938	13.34	6.60					+ 6.74
February		13.10	4.92					+ 8.18
March		12.08	5.01					+ 7.07
								+35.97

RAINFALL AT PLANTATION ALBION.

Month.		Rainfall 1936—1938, Inches.	Average Rainfall 1865—1937, Inches.	Excess or Deficit during Growth of the Various Experiments.	
				Field 31 K.	Field 49 A.
September	1936	0.06	1.98	− 1.92	
October		1.35	1.83	− 0.48	
November		2.49	3.63	− 1.14	
December		12.08	8.12	+ 3.96	
January	1937	5.28	6.69	− 1.41	
February		1.01	4.91	− 3.90	
March		1.98	5.50	− 3.52	
April		6.04	6.24	− 0.20	− 0.20
May		13.46	9.25	+ 4.21	+ 4.21
June		20.03	9.08	+10.95	+10.95
July		14.28	8.34	+ 5.94	+ 5.94
August		3.61	5.50	+12.49	− 1.89
September		1.09	1.98		− 0.89
October		3.78	1.83		+ 1.95
November		5.25	3.63		+ 1.62
December		8.37	8.12		+ 0.25
January	1938	12.06	6.69		+ 5.37
February		14.17	4.91		+ 9.26
March		14.96	5.50		+ 9.46
					+46.03

RAINFALL AT PLANTATION ROSE HALL.

Month.		Rainfall 1937, Inches.	Average Rainfall 1907—1937, Inches.	Excess or Deficit during Growth of the Experiment. Field 81 R.H.
January	1937	6.19	7.95	− 1.76
February		0.67	5.93	− 5.26
March		1.69	5.88	− 4.19
April		5.79	5.75	+ 0.04
May		12.68	10.77	+ 1.91
June		20.76	11.10	+ 9.66
July		14.03	10.20	+ 3.83
August		3.76	6.04	− 2.28
September		2.01	2.19	− 0.18
October		2.01	2.56	− 0.55
November		5.21	3.39	+ 1.82
				+ 3.04

RAINFALL AT PLANTATION PROVIDENCE, BERBICE.

Month.		Rainfall 1936—1937, Inches.	Average Rainfall 1909—1937, Inches.	Excess or Deficit during Growth of the Experiment. Field 14 E.W.
September	1936	0.73	2.63	− 1.90
October		2.60	2.91	− 0.31
November		2.69	3.46	− 0.77
December		15.34	10.41	+ 4.93
January	1937	6.96	8.80	− 1.84
February		0.96	5.47	− 4.51
March		2.04	5.00	− 2.96
April		7.20	6.21	+ 0.99
May		11.84	11.22	+ 0.62
June		21.64	12.59	+ 9.05
July		10.84	11.42	− 0.58
August		4.18	6.97	− 2.79
September		2.50	2.63	− 0.13
				− 0.20

RAINFALL AT PLANTATION BLAIRMONT.

Month.		Rainfall 1936—1938, Inches.	Average Rainfall 1897—1937, Inches.	Excess or Deficit, during Growth of the Various Experiments		
				Field 71 B.L.	Fields 24 & 26 Rp.	Field 37 Rp.
October	1936	2.91	2.45	+ 0.46		
November		1.66	3.46	− 1.80		
December		20.44	9.59	+10.85	+10.85	
January	1937	7.09	7.71	− 0.62	− 0.62	
February		0.61	4.88	− 4.27	− 4.27	− 4.27
March		1.50	6.30	− 4.80	− 4.80	− 4.80
April		6.97	6.87	+ 0.10	+ 0.10	+ 0.10
May		14.39	11.47	+ 2.92	+ 2.92	+ 2.92
June		19.34	11.64	+ 7.70	+ 7.70	+ 7.70
July		12.18	9.72	+ 2.46	+ 2.46	+ 2.46
August		5.23	6.49	− 1.26	− 1.26	− 1.26
September		1.48	2.21	− 0.73	− 0.73	− 0.73
October		2.55	2.45	+11.01	+ 0.10	+ 0.10
November		5.83	3.46		+ 2.37	+ 2.37
December		9.93	9.59		+14.82	+ 0.34
January	1938	11.49	7.71			+ 3.78
February		18.27	4.88			+13.39
March		13.01	6.30			+ 6.71
						+28.81

RAINFALL AT PLANTATION CANE GROVE.

Month.		Rainfall 1936—1938, Inches.	Average Rainfall 1916—1937, Inches.	Excess or Deficit during Growth of the Various Experiments.				
				Field 4 P.	Field 36 S.D.	Field 53 M.	Field 17 P.	Field 50 S.M. A,B.
October	1936	3.45	3.59	− 0.14				
November		2.09	5.30	− 3.21				
December		13.76	11.61	+ 2.15	+ 2.15			
January	1937	11.50	7.85	+ 3.65	+ 3.65			
February		0.76	3.75	− 2.99	− 2.99			
March		0.85	3.81	− 2.96	− 2.96	− 2.96		
April		5.13	5.89	− 0.76	− 0.76	− 0.76	− 0.76	− 0.76
May		18.30	11.48	+ 6.82	+ 6.82	+ 6.82	+ 6.82	+ 6.82
June		21.26	12.04	+ 9.22	+ 9.22	+ 9.22	+ 9.22	+ 9.22
July		14.34	9.97	+ 4.37	+ 4.37	+ 4.37	+ 4.37	+ 4.37
August		7.73	6.79	+ 0.94	+ 0.94	+ 0.94	+ 0.94	+ 0.94
September		1.36	2.38	− 1.02	− 1.02	− 1.02	− 1.02	− 1.02
October		4.44	3.59	+ 0.85	+ 0.85	+ 0.85	+ 0.85	+ 0.85
November		3.23	5.30	+16.92	− 2.07	− 2.07	− 2.07	− 2.07
December		12.81	11.61		+ 1.20	+ 1.20	+ 1.20	+ 1.20
January	1938	10.66	7.85		+19.40	+ 2.81	+ 2.81	+ 2.81
February		12.44	3.75			+ 8.69	+ 8.69	+ 8.69
March		20.46	3.81			+16.65	+16.65	+16.65
April		11.44	5.89			+44.74	+47.70	+ 5.55
								53.25

RAINFALL AT PLANTATION ENMORE.

Month.		Rainfall 1936-1938, Inches.	Average Rainfall 1913-1937, Inches.	Excess or Deficit during Growth of the Various Experiments.			
				Field 16 E.P.	Field 29 E.W.	Field 13 H. A,B.	Field 15 B.A.
September	1936	1.26	2.43	− 1.17			
October		4.51	3.09	+ 1.42			
November		2.57	5.66	− 3.09			
December		15.13	11.21	+ 3.92			
January	1937	7.99	8.13	− 0.14			
February		0.49	3.96	− 3.47			
March		0.87	4.23	− 3.36	− 3.36		
April		3.91	5.41	− 1.50	− 1.50	− 1.50	− 1.50
May		9.32	10.87	− 1.55	− 1.55	− 1.55	− 1.55
June		16.75	11.99	+ 4.76	+ 4.76	+ 4.76	+ 4.76
July		14.01	9.12	+ 4.89	+ 4.89	+ 4.89	+ 4.89
August		7.66	6.12	+ 0.71	+ 1.54	+ 1.54	+ 1.54
September		4.02	2.43		+ 1.59	+ 1.59	+ 1.59
October		1.55	3.09		− 1.54	− 1.54	− 1.54
November		2.74	5.66		− 2.92	− 2.92	− 2.92
December		9.67	11.21		− 1.54	− 1.54	− 1.54
January	1938	10.46	8.13		+ 2.33	+ 2.33	+ 2.33
February		11.86	3.96		+ 7.90	+ 7.90	+ 7.90
March		13.59	4.23		+ 9.36	+13.96	+ 9.36
April		10.07	5.41		+ 4.66		+23.32
					+24.62		

RAINFALL AT PLANTATION LUSIGNAN.

Month.		Rainfall 1936—1938, Inches.	Average Rainfall 1887—1937, Inches.	Excess or Deficit during Growth of the Various Experiments.			
				Fields 76 A. & 26 W.	Field 2 G.H.W.	Field 40 W.	Field H.
September	1936	2.49	2.22	+ 0.27			
October		3.31	2.42	+ 0.89			
November		3.49	4.87	− 1.38	− 1.38		
December		18.77	10.89	+ 7.88	+ 7.88		
January	1937	11.47	8.10	+ 3.37	+ 3.37		
February		1.13	4.97	− 3.84	− 3.84		
March		1.19	5.98	− 4.79	− 4.79	− 4.79	
April		5.10	6.13	− 1.03	− 1.03	− 1.03	− 1.03
May		11.74	10.64	+ 1.10	+ 1.10	+ 1.10	+ 1.10
June		18.86	11.63	+ 7.23	+ 7.23	+ 7.23	+ 7.23
July		12.98	9.27	+ 3.71	+ 3.71	+ 3.71	+ 3.71
August		7.11	5.51	+13.41	+ 1.60	+ 1.60	+ 1.60
September		2.68	2.22		+ 0.46	+ 0.46	+ 0.46
October		2.52	2.42		+ 0.10	+ 0.10	+ 0.10
November		2.39	4.87		− 2.48	− 2.48	− 2.48
December		10.56	10.89		+11.93	− 0.33	− 0.33
January	1938	13.58	8.10			+ 5.48	+ 5.48
February		12.92	4.97			+ 7.95	+ 7.95
March		17.71	5.98			+11.73	+11.73
April		9.09	6.13			+30.73	+ 2.96
							+38.48

RAINFALL AT PLANTATION LA BONNE INTENTION.

Month.	Rainfall 1936–1938, Inches.	Average Rainfall 1916–1937, Inches.	Excess or Deficit during Growth of the Various Experiments.	
			Field 45 M.W.	Field 36 L.R.
September 1936	1.36	2.37	− 1.01	
October	3.02	3.37	− 0.35	
November	2.60	6.34	− 3.74	
December	17.80	12.10	+ 5.70	
January 1937	10.91	8.72	+ 2.19	
February	0.74	3.80	− 3.06	
March	1.23	4.50	− 3.27	
April	4.91	5.19	− 0.28	− 0.28
May	10.86	11.21	− 0.35	− 0.35
June	16.87	12.46	+ 4.41	+ 4.41
July	11.51	9.68	+ 1.83	+ 1.83
August	6.92	6.99	+ 2.07	− 0.07
September	2.26	2.37		− 0.11
October	3.53	3.37		+ 0.16
November	2.54	6.34		− 3.80
December	10.21	12.10		− 1.89
January 1938	13.39	8.72		+ 4.67
February	11.73	3.80		+ 7.93
March	15.25	4.50		+10.75
				+23.25

RAINFALL AT PLANTATION OGLE.

Month.		Rainfall 1936—1938, Inches.	Average Rainfall 1906—1937, Inches.	Excess or Deficit during Growth of the Various Experiments.	
				Fields 109 E. & 45 O.	Field 45 O.L.
October	1936	2.69	3.35	− 0.66	
November		3.43	5.11	− 1.68	
December		24.83	11.03	+13.80	
January	1937	14.70	8.04	+ 6.66	
February		0.72	4.40	− 3.68	
March		0.93	5.31	− 4.38	− 4.38
April		4.99	5.68	− 0.69	− 0.69
May		13.82	11.31	+ 2.51	+ 2.51
June		18.55	11.42	+ 7.13	+ 7.13
July		15.91	9.85	+ 6.06	+ 6.06
August		8.33	7.05	+ 1.28	+ 1.28
September		2.49	2.30	+ 0.19	+ 0.19
October		3.36	3.35	+26.54	+ 0.01
November		3.56	5.11		− 1.55
December		10.72	11.03		− 0.31
January	1938	11.93	8.04		+ 3.89
February		16.31	4.40		+11.91
March		18.59	5.31		+13.28
April		9.40	5.68		+ 3.72
					+43.05

RAINFALL AT PLANTATION DIAMOND.

Month.	Rainfall 1936-1938, Inches.	Average Rainfall 1890-1937, Inches.	Excess or Deficit during Growth of the Various Experiments.		
			Field 93 G.D. A,B.	Field 97 G.D.	Field 79 G.D.
April 1936	11.05	7.22	+ 3.83		
May	10.78	12.79	− 2.01		
June	13.53	14.28	− 0.75		
July	9.54	11.32	− 1.78		
August	2.95	7.94	− 4.99		
September	6.15	3.78	+ 2.37		
October	3.81	4.03	− 0.22		
November	3.98	5.88	− 1.90		
December	20.98	12.23	+ 8.75	+ 8.75	
January 1937	13.04	9.61	+ 3.43	+ 3.43	
February	0.88	5.81	− 4.93	− 4.93	
March	1.76	7.47	− 5.71	− 5.71	− 5.71
April	5.49	7.22	− 1.73	− 1.73	− 1.73
May	17.34	12.79	+ 4.55	+ 4.55	+ 4.55
June	23.24	14.28	+ 8.96	+ 8.96	+ 8.96
July	14.56	11.32	+ 3.24	+ 3.24	+ 3.24
August	8.32	7.94	+11.11	+ 0.38	+ 0.38
September	3.88	3.78		+ 0.10	+ 0.10
October	4.43	4.03		+ 0.40	+ 0.40
November	4.22	5.88		− 1.66	− 1.66
December	9.85	12.23		+15.78	− 2.38
January 1938	15.43	9.61			+ 5.82
February	16.62	5.81			+10.81
March	20.59	7.47			+13.12
April	10.16	7.22			+ 2.94
					+38.84

RAINFALL AT PLANTATION WALES.

Month.	Rainfall 1936—1938, Inches.	Average Rainfall 1906—1937, Inches.	Excess or Deficit during Growth of the Various Experiments.		
			Field 10 C. A,B.	Field 3 Y.R.	Field 39 V. A,B.
October 1936	3.14	4.26	− 1.12		
November	4.44	6.21	− 1.77		
December	18.75	12.60	+ 6.15		
January 1937	13.86	9.52	+ 4.34		
February	0.73	5.15	− 4.42		
March	1.36	6.86	− 5.50	− 5.50	
April	5.44	6.87	− 1.43	− 1.43	− 1.43
May	17.36	13.76	+ 3.60	+ 3.60	+ 3.60
June	22.44	14.74	+ 7.70	+ 7.70	+ 7.70
July	14.37	11.65	+ 2.72	+ 2.72	+ 2.72
August	7.48	8.19	− 0.71	− 0.71	− 0.71
September	2.59	3.76	− 1.17	− 1.17	− 1.17
October	4.05	4.26	− 0.21	− 0.21	− 0.21
November	4.92	6.21	− 1.29	− 1.29	− 1.29
December	8.60	12.60	+ 6.89	− 4.00	− 4.00
January 1938	15.37	9.52		+ 5.85	+ 5.85
February	20.19	5.15		+15.04	+15.04
March	21.14	6.86		+14.28	+26.10
				+34.88	

RAINFALL AT PLANTATION LEONORA.

Month.		Rainfall 1936—1938, Inches.	Average Rainfall 1906—1937, Inches.	Excess or Deficit during Growth of the Various Experiments.	
				Field 16 Gv.	Field 53 Sv. A.B.
October	1936	3.96	3.68	+ 0.28	
November		4.51	6.32	— 1.81	
December		17.50	11.66	+ 5.84	
January	1937	14.04	9.27	+ 4.77	
February		0.81	4.92	— 4.11	
March		1.84	5.34	— 3.50	
April		6.21	5.62	+ 0.59	
May		10.82	12.84	— 2.02	— 2.02
June		18.38	12.83	+ 5.55	+ 5.55
July		13.64	10.90	+ 2.74	+ 2.74
August		6.36	7.14	— 0.78	— 0.78
September		0.94	2.73	— 1.79	— 1.79
October		1.64	3.68	+ 5.76	— 2.04
November		4.25	6.32		— 2.07
December		10.68	11.66		— 0.98
January	1938	16.91	9.27		+ 7.64
February		13.56	4.92		+ 8.64
March		14.31	5.34		+ 8.97
April		9.45	5.62		+ 3.83
					+27.69

Rainfall at Plantation Uitvlugt.

Month.		Rainfall 1936—1938, Inches.	Average Rainfall 1916—1937, Inches.	Excess or Deficit during Growth of the Various Experiments.							
				Field 70 Z.	Field 64 Z.	Field 33 E.	Field 71 M.Z.	Field 46 DeW.	Field 42 W.	Field 13 E.	Field 31 E.
August	1936	4.39	7.73	− 3.34							
September		1.50	3.24	− 1.74	− 1.74						
October		3.24	4.57	− 1.33	− 1.33	− 1.33	− 1.33				
November		3.27	7.19	− 3.92	− 3.92	− 3.92	− 3.92				
December		17.06	13.52	+ 3.54	+ 3.54	+ 3.54	+ 3.54				
January	1937	16.54	10.06	+ 6.48	+ 6.48	+ 6.48	+ 6.48				
February		1.30	4.34	− 3.04	− 3.04	− 3.04	− 3.04	− 3.04			
March		1.92	4.86	− 2.94	− 2.94	− 2.94	− 2.94	− 2.94	− 2.94		
April		7.46	5.98	+ 1.48	+ 1.48	+ 1.48	+ 1.48	+ 1.48	+ 1.48	+ 1.48	
May		13.55	13.22	+ 0.33	+ 0.33	+ 0.33	+ 0.33	+ 0.33	+ 0.33	+ 0.33	+ 0.33
June		17.57	14.57	+ 3.00	+ 3.00	+ 3.00	+ 3.00	+ 3.00	+ 3.00	+ 3.00	+ 3.00
July		17.86	11.89	+ 5.97	+ 5.97	+ 5.97	+ 5.97	+ 5.97	+ 5.97	+ 5.97	+ 5.97
August		7.48	7.73	− 0.25	− 0.25	+ 9.57	− 0.25	− 0.25	− 0.25	− 0.25	− 0.25
September		2.48	3.24	+ 4.24	− 0.76		− 0.76	− 0.76	− 0.76	− 0.76	− 0.76
October		2.92	4.57		− 1.65		− 1.65	− 1.65	− 1.65	− 1.65	− 1.65
November		5.54	7.19		+ 5.17		− 1.65	− 1.65	− 1.65	− 1.65	− 1.65
December		11.17	13.52				+ 5.26	− 2.35	− 2.35	− 2.35	− 2.35
January	1938	19.60	10.06					+ 9.54	+ 9.54	+ 9.54	+ 9.54
February		17.22	4.34					+12.88	+12.88	+12.88	+12.88
March		17.85	4.86					+20.56	+23.60	+12.99	+12.99
April		10.12	5.98							+39.53	+ 4.14
											+42.19

APPENDIX II.

(*a*) Soils of Variety Trial Sites.

Plantation :— Sophia Sugar Experiment Station.

Field No. :—	1 E. A, B, C, D.		2 E.		3 E.		4 E.		5 E. A, C, E.		8 E. A, B.		9 E. A, B.	
Sample No.	D. 1233	D. 1234	D. 1094	D. 1095	D. 900	D. 901	D. 1235	D. 1236	D. 1098	D. 1099	D. 1118	D. 1119	D. 1239	D. 1240
Sampling Depth . .	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	5.91	6.85	6.34	5.44	5.73	6.54	5.50	6.75	5.70	6.78	5.74	7.32	5.94	7.42
Exchange pH	5.03	6.19	4.66	4.29	4.49	5.45	4.11	5.81	4.49	5.81	4.80	6.56	4.29	6.51
M.P.S.	47.3	45.8	53.3	54.3	44.1	49.2	46.1	50.3	48.3	52.9	46.5	46.4	45.3	48.2
% Sand	5.5	10.4	3.0	4.0	2.5	1.7	5.4	13.4	2.0	2.0	8.0	4.0	7.0	2.7
Index of Texture	46	44	53	54	44	49	45	48	48	53	45	46	44	48
% Soluble Salts	0.110	0.239	0.076	0.174	0.066	0.220	0.044	0.194	0.086	0.279	0.159	0.226	0.028	0.202
% Organic Matter	1.60	0.89	1.79	1.15	1.77	0.75	1.90	0.84	1.73	0.73	1.68	0.98	1.40	0.69
% Nitrogen	0.143	0.098	0.142	0.117	0.156	0.096	0.092	0.088	0.132	0.091	0.105	0.088	0.125	0.078
Carbon/Nitrogen ratio	6.51	5.44	7.3	5.7	6.57	4.56	11.98	5.56	8.10	27.62	9.3	6.5	6.48	5.12
Rate of Solution	179	−1	110	13	23	3	61	33	43	−24	33	37	45	33
Lime Requirement, Ton/acre $CaCO_3$	3.27	1.68	4.0	4.5	3.87	1.71	5.94	1.83	3.6	0.9	2.5	0.5	4.20	0.43

Appendix II *(Contd.)*.

(*a*) Soils of Variety Trial Sites.

Plantation :—	Sophia Sugar Experiment Station.													
Field No. :—	10 E.		13 E.		14 E.		16 E. A, B, C.		17 E.		2 W. A,B,C,D.		3 W.	
Sample No. :—	D. 1241	D. 1242	D. 1429	D. 1430	D. 1251	D. 1252	D. 1253	D. 1254	D. 1255	D. 1256	D. 1243	D. 1244	D. 1096	D. 1097
Sampling Depth :—	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	6.31	6.85	6.68	7.70	6.21	7.10	6.17	6.53	6.49	8.20	5.57	6.04	5.47	5.45
Exchange pH	4.97	6.11	5.53	6.89	5.29	6.31	4.90	5.54	5.27	7.05	4.09	5.02	3.92	4.33
M.P.S.	48.7	46.2	41.2	42.0	45.5	43.1	45.7	44.8	45.3	38.5	37.7	46.6	52.4	55.0
% Sand	7.2	6.0	5.2	3.2	20.0	45.5	22.5	22.0	18.5	32.5	7.0	6.5	3.9	2.5
Index of Texture	47	45	41	41	42	34	41	40	42	32	36	45	52	55
% Soluble Salts	0.044	0.269	0.039	0.156	0.072	0.122	0.037	0.061	0.038	0.059	0.028	0.119	0.049	0.126
% Organic Matter	1.10	0.73	1.21	1.40	1.12	0.50	1.35	0.97	1.06	0.41	1.93	1.07	1.60	0.73
% Nitrogen	0.112	0.078	0.138	0.094	0.076	0.066	0.060	0.057	0.081	0.046	0.129	0.105	0.122	0.094
Carbon/Nitrogen ratio	5.75	5.44	5.10	8.62	8.52	4.39	13.01	9.93	7.58	5.26	8.66	5.93	7.6	4.5
Rate of Solution	129	0	...	...	37	0	177	187	104	79	90	−354	15	18
Lime Requirement, Ton/acre $CaCO_3$	2.85	1.20	2.20	0.10	2.42	0.36	3.00	1.61	2.49	...	5.25	3.36	6.7	3.4

APPENDIX II (*Contd.*).

(*a*) SOILS OF VARIETY TRIAL SITES.

Plantation :—	SOPHIA SUGAR EXPERIMENT STATION.													
Field No. :—	4 W. A,B,C,D.		5 W.		6 W.		7 W.		8 W.		9 W.		13 W.	
Sample No. :—	D. 1247	D. 1248	D. 1112	D. 1113	D. 1269	D. 1270	D. 1114	D. 1115	D. 1116	D. 1117	D. 1068	D. 1069	D. 1427	D. 1428
Sampling Depth :—	0—1 ft.	1- 2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	5.22	5.92	6.44	7 39	6.39	7.46	6.55	7.99	7.13	7.83	6.31	7.22	5.65	7.67
Exchange pH	4.13	5.44	5.17	6.24	6.04	6.31	5.20	6.75	6.19	6.75	5.40	6.45	4.49	6.63
M.P.S.	45.1	49.8	47.3	52.6	55.6	58.3	44.5	50.5	43.9	50.0	43.7	43.5	44.1	43.5
% Sand	2.0	2.5	4.9	4.0	3.0	2.0	7.0	8.0	8.0	7.5	3.2	2.9	5.4	2.3
Index of Texture	47	49	46	52	55	58	43	49	42	49	43	43	43	43
% Soluble Salts	0.054	0.265	0.058	0.154	0.078	0.084	0.047	0.139	0.084	0.159	0.084	0.139	0.032	0.114
% Organic Matter	1.51	0.87	1.70	0.88	1.42	1.06	1.76	0.75	1.46	0.76	1.35	0.77	1.21	1.32
% Nitrogen	0.118	0.125	0.119	0.084	0.113	0.162	0.126	0.081	0.126	0.063	0.108	0.088	0.126	0.082
Carbon/Nitrogen ratio	7.43	4.02	8.27	6.25	7.31	3.81	8.12	5.36	6.71	6.98	7.26	5.09	5.55	9.37
Rate of Solution	61	43	210	60	327	176	217	106	232	93	123	66	...	...
Lime requirement, Ton/acre $CaCO_3$	5.85	2.46	2.8	0.6	2.97	1.17	2.5	...	1.0	...	2.4	0.8	4.1	0.5

APPENDIX II *(Contd.)*.

(a) SOILS OF VARIETY TRIAL SITES.

Plantation :—	SOPHIA SUGAR EXPERIMENT STATION.				PORT MOURANT.						BLAIRMONT.			
Field No. :—	15 W.		16 W.		7 A.W. A.B.		15 A.O.L.		11 T.L.		37 Rp.		24 Rp.	
Sample No. :—	D. 1108	D. 1109	D. 1279	D. 1280	B. 475	B. 476	B. 525	B. 526	B. 261	B. 262	B. 527	B. 528	B. 282	B. 283
Sampling Depth :—	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	5.96	6.82	6.06	7.65	5.96	6.99	5.40	6.11	5.18	5.34	5.55	5.85	5.15	5.40
Exchange pH	4.53	5.69	5.05	6.57	4.92	5.97	4.63	5.29	4.12	4.38	3.87	4.66	4.17	4.54
M.P.S.	39.3	40.3	38.7	39.1	48.4	49.4	48.6	54.8	53.7	53.7	53.1	53.4	49.5	46.3
% Sand	26.2	25.0	11.5	12.0	3.5	3.5	2.6	1.2	5.5	1.7	2.0	1.0	6.0	3.5
Index of Texture	34	35	36	37	47	49	48	55	53	53	53	53	48	46
% Soluble Salts	0.022	0.070	0.023	0.048	0.061	0.110	0.055	0.161	0.077	0.124	0.023	0.066	0.046	0.077
% Organic Matter	1.28	0.96	0.65	1.06	3.53	1.48	3.42	1.41	3.28	1.60	3.88	1.19	4.94	2.83
% Nitrogen	0.124	0.070	0.244	0.214	0.274	0.109	0.204	0.140	0.243	0.141	0.349	0.150	0.323	0.159
Carbon/Nitrogen ratio	6.0	7.9	1.55	2.87	7.45	7.88	9.7	5.8	7.83	6.58	6.44	4.59	9.05	10.30
Rate of Solution	115	134	132	109	224	149	60	19	39	7	−17	25	6	20
Lime Requirement, Ton/acre $CaCO_3$	2.5	0.9	2.8	0.4	5.52	1.58	5.50	2.7	7.1	4.1	8.9	3.7	7.8	4.6

APPENDIX II (*Contd.*).

(*a*) SOILS OF VARIETY TRIAL SITES.

Plantation :—	PROVIDENCE.		ENMORE.						LUSIGNAN.					
Field No. :—	14 E.W.		29 E.W.		13 H. A. B.		15 B.A.		2 G.H.W.		76 A.		40 W.	
Sample No. :—	B. 332	B. 333	D. 1328	D. 1329	D. 1219	D. 1220	D. 1080	D. 1081	D. 1261	D. 1262	D. 1090	D. 1091	D. 1056	D. 1057
Sampling Depth : —	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	4.78	4.75	4.80	4.59	5.17	4.99	4.56	4.68	5.45	5.92	5.00	5.10	4.75	4.78
Exchange pH	3.70	3.95	3.88	3.88	4.10	4.14	3.70	3.69	4.04	4.83	3.65	4.07	3.63	3.87
M.P.S.	51.4	52.1	51.4	55.6	50.6	53.3	51.7	52.0	49.6	52.9	50.5	48.5	42.8	51.3
% Sand	8.4	2.4	4.5	3.0	6.5	2.5	8.3	11.1	3.5	1.5	9.0	7.5	13.0	3.7
Index of Texture	50	52	51	55	49	53	50	50	49	53	49	47	40	51
% Soluble Salts	0.037	0.112	0.041	0.121	0.064	0.169	0.022	0.027	0.035	0.154	0.020	0.057	0.028	0.104
% Organic Matter	2.16	0.79	3.21	1.28	2.17	0.89	3.75	2.07	1.99	2.24	1.279	0.621	2.55	1.17
% Nitrogen	0.211	0.095	0.218	0.132	0.165	0.081	0.226	0.133	0.186	0.120	0.156	0.095	0.150	0.105
Carbon/Nitrogen ratio	5.94	4.86	8.54	5.64	7.62	6.41	9.64	9.05	6.20	10.84	8.19	6.54	9.84	6.46
Rate of Solution	18	20	...	...	50	28	6	18	142	30	18	38	−5	−3
Lime Requirement, Ton/acre $CaCO_3$	9.7	5.5	14.0	10.8	7.0	5.0	17.6	15.6	6.20	3.10	10.0	4.4	9.7	8.0

Appendix II (*Contd.*).

(*a*) Soils of Variety Trial Sites.

Plantation :—	Cane Grove.				La Bonne Intention.				Ogle.			
Field No. :—	50 S.M. A.B.		17 P.		45 M.W.		36 L.R.		45 C.L.		109 E.	
Sample No. :—	D. 1200	D. 1201	D. 1084	D. 1085	D. 1086	D. 1087	D. 1078	D. 1079	D. 1330	D. 1331	D. 1102	D. 1103
Sampling Depth :—	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	4.59	4.56	4.46	4.87	5.51	7.17	5.34	5.91	5.83	7.51	5.27	6.11
Exchange pH	3.68	3.66	3.82	3.89	4.05	6.02	4.19	5.25	4.66	6.51	4.11	4.97
M.P.S.	57.0	8.9	61.9	54.2	47.7	49.7	42.5	45.0	45.1	46.5	45.3	50.8
% Sand	7.0	6.5	7.3	4.0	7.4	3.7	2.5	1.7	8.5	7.0	22.9	7.8
Index of Texture	57	58	61	53	46	49	42	45	43	45	39	49
% Soluble Salts	0.034	0.029	0.017	0.019	0.035	0.102	0.051	0.202	0.040	0.095	0.031	0.071
% Organic Matter	6.32	5.13	7.83	3.10	1.117	0.531	1.89	0.86	1.38	0.71	1.72	0.76
% Nitrogen	0.337	0.223	0.471	0.207	0.127	0.025	0.156	0.091	0.140	0.095	0.147	0.098
Carbon/Nitrogen ratio	10.88	13.34	9.64	11.44	8.79	21.24	7.03	5.46	5.71	4.35	7.8	4.5
Rate of Solution	16	24	6	16	44	71	103	61	...	...	63	14
Lime Requirement, Ton/acre $CaCO_3$	19.3	18.4	19.3	14.2	5.5	0.5	5.7	2.4	3.8	nil	5.8	2.5

APPENDIX II (*Contd.*).

(*a*) SOILS OF VARIETY TRIAL SITES.

Plantation :—	DIAMOND.				WALES.				LEONORA.			
Field No. :—	93 G.D. A.B.		97 G.D.		39 V. A, B.		3 Y.R.		16 Gv.		53 Sv. A, B.	
Sample No. :—	D. 1207	D. 1208	D. 1100	D. 1101	D. 1203	D. 1204	D 1359	D. 1360	D. 1106	D. 1107	D. 1198	D. 1199
Sampling Depth :—	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	4.78	4.47	5.34	5.03	4.66	5.04	5.07	4.97	5.23	5.29	4.83	4.83
Exchange pH	3.80	3.80	3.97	3.79	3.65	3.82	3.80	3.78	4.19	3.97	3.66	3.77
M.P.S.	51.6	53.4	58.2	56.4	52.0	56.7	46.2	48.0	45.6	47.2	45.4	49.5
% Sand	3.0	5.5	6.5	5.0	7.0	3.5	8.0	6.5	10.3	12.5	5.4	8.0
Index of Texture	51	52	57	55	51	56	45	47	44	45	44	48
% Soluble Salts	0.027	0.041	0.025	0.016	0.011	0.010	0.011	0.009	0.017	0.055	0.016	0.015
% Organic Matter	3.09	2.00	0.84	3.03	2.12	1.11	2.36	1.26	1.10	0.96	2.25	1.85
% Nitrogen	0.187	0.133	0.158	0.108	0.165	0.098	0.266	0.122	0.092	0.091	0.182	0.157
Carbon/Nitrogen ratio	9.62	8.71	3.1	16.2	7.46	6.56	5.15	5.99	6.9	5.7	7.16	6.83
Rate of Solution	...	...	−15	−9	9	20	..	...	49	11	19	11
Lime Requirement, Ton/acre $CaCO_3$	11.0	11.7	12.9	13.7	13.6	11.8	11.2	9.9	5.9	4.6	13.8	14.0

Appendix II *(Contd.)*.

(a) Soils of Variety Trial Sites.

Plantation :—	Uitvlugt.							
Field No. :—	13 E.		71 M.Z.		46 de W.		42 W.	
Sample No. :—	D. 1205	D. 1206	D. 1249	D. 1250	D. 1104	D. 1105	D. 1058	D. 1059
Sampling Depth :—	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	5.04	5.55	4.78	4.90	4.71	4.60	4.85	5.05
Exchange pH	3.75	4.07	3.73	3.83	3.82	3.72	4.11	3.99
M.P.S.	47.4	54.8	52.7	51.7	63.7	58.0	54.7	49.7
% Sand	10.0	4.5	2.9	1.4	5.5	3.2	6.2	1.5
Index of Texture	45	54	52	52	63	57	54	49
% Soluble Salts	0.018	0.021	0.013	0.011	0.031	0.012	0.023	0.012
% Organic Matter	1.72	0.97	2.91	1.53	5.82	2.35	6.34	1.60
% Nitrogen	0.133	0.087	0.245	0.136	0.285	0.147	0.277	0.140
Carbon/Nitrogen ratio	7.51	6.50	6.88	6.56	11.8	9.2	13.26	6.65
Rate of Solution	42	25	18	13	−8	3	6	−4
Lime Requirement, Ton/acre $CaCO_3$	8.6	4.9	13.60	10.78	17.5	13.7	13.7	10.0

APPENDIX II *(Contd.)*.

(*b*) SOILS OF MANURIAL TRIAL SITES.

Plantation :—	SKELDON.						ALBION.		PORT MOURANT.		BLAIRMONT.			
Field No. :—	7 Eliza and Mary.		8 Eliza and Mary.		8 Springlands.		31 Kilcoy.		23 Resource.		71 Bush Lot.		26 Rampoor.	
Sample No. :—	B. 263	B. 264	B. 266	B. 265	B. 267	B. 268	B. 255	B. 256	B. 479	B. 480	B. 224	B. 225	B. 376	B. 377
Sampling Depth :—	0—1 ft	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	4.55	4.73	4.92	4.95	5.52	4.73	6.17	6.14	5.46	6.32	5.34	5.42	5.05	6.12
Exchange pH	3.86	4.06	3.96	4.26	5.07	4.28	5.27	5.52	4.37	5.48	3.92	4.63	4.19	5.00
M.P.S.	50.1	54.2	52.0	52.3	50.3	53.5	52.5	54.7	50.6	50.2	50.7	48.4	53.0	48.2
% Sand	6.0	4.7	7.7	5.7	5.2	7.5	3.9	1.5	2.0	2.5	8.9	3.7	5.4	1.5
Index of Texture	49	53	51	51	49	52	52	54	50	50	49	48	52	48
% Soluble Salts	0.135	0.265	0.064	0.165	0.371	0.349	0.070	0.204	0.050	0.132	0.036	0.137	0.062	0.105
% Organic Matter	3.05	1.67	2.81	2.62	1.10	2.07	2.95	1.65	2.74	0.88	2.70	1.21	3.22	0.68
% Nitrogen	0.251	0.156	0.237	0.219	0.135	0.226	0.230	0.143	0.223	0.093	0.241	0.129	0.260	0.087
Carbon/Nitrogen ratio	7.04	6.20	6.86	6.64	4.71	5.33	7.43	6.70	7.12	5.49	6.49	5.44	7.2	4.5
Rate of Solution	−2	−43	−117	−189	−54	−47	151	51	65	26	137	42	30	35
Lime Requirement, Ton/acre $CaCO_3$	8.0	5.0	7.1	5.3	2.5	5.2	4.0	2.1	6.19	1.99	8.5	3.4	7.6	2.4
Available P_2O_5 p.p.m. (Truog)	14	<10	<10	<10	<10	<10	18	40	Trace	10	26	19	82	84
Citric P_2O_5 p.p.m.	33	12	42	21	8	18	41	32	31	8	116	22	36	12
Exch. and water sol. bases mg. eqs./100 gms.														
Lime	4.15	3.35	5.60	4.62	2.47	6.33	10.56	8.24	5.82	3.62	6.60	4.62	4.77	2.45
Magnesia	9.02	12.20	5.95	11.58	8.95	16.48	12.72	16.67	11.40	10.62	4.87	13.30	13.25	13.83
Potash	0.27	0.24	0.43	0.31	0.33	0.29	0.34	0.34	0.37	0.38	0.57	0.23	0.35	0.34
Soda	0.70	2.97	0.73	0.72	3.25	0.80	1.18	2.58	1.53	4.53	1.42	3.07	1.23	3.40

Appendix II (*Contd.*).

(*b*) Soils of Manurial Trial Sites.

Plantation :—	Rose Hall.		Cane Grove.						Enmore.		Lusignan.		Ogle.	
Field No. :—	81 Rose Hall.		4 Palmyra.		36 South Diamond.		53 Melville.		16 East Paradise.		26 West.		45 Ogle A, B.	
Sample No. :—	B. 394	B. 395	D. 1267	D. 1268	D. 1277	D. 1278	D. 910	D. 911	D. 964	D. 965	D. 1018	D. 1019	D. 1020	D. 1021
Sampling Depth :—	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	5.35	6.24	4.25	4.58	4.64	4.60	4.70	4.92	4.77	4.65	5.97	6.21	4.98	5.07
Exchange pH	4.49	5.40	3.61	3.71	3.59	3.64	3.60	3.72	3.52	3.60	4.90	5.29	3.63	3.84
M.P.S.	50.5	52.2	60.5	62.1	57.4	65.2	49.9	47.6	51.9	54.0	45.6	47.2	47.6	50.4
% Sand	5.6	5.0	4.0	1.5	2.2	1.1	2.7	3.7	2.5	2.0	1.7	2.7	7.7	2.5
Index of Texture	49	51	60	62	57	65	49	47	51	54	45	47	46	50
% Soluble Salts	0.082	0.185	0.032	0.023	0.019	0.021	0.020	0.018	0.036	0.070	0.046	0.166	0.038	0.107
% Organic Matter	2.42	1.65	5.66	3.02	4.45	6.02	4.15	1.89	2.73	1.74	1.56	0.97	1.94	1.15
% Nitrogen	0.179	0.122	0.454	0.258	0.263	0.222	0.189	0.147	0.204	0.150	0.140	0.100	0.143	0.116
Carbon/Nitrogen ratio	7.8	7.8	7.23	6.78	9.80	15.88	12.8	7.45	7.78	6.76	6.48	5.64	7.85	5.75
Rate of Solution	72	33	—35	0	9	21	2	12	51	14	43	51	16	2
Lime Requirement, Ton/acre $CaCO_3$	5.34	2.28	21.0	17.1	17.1	17.3	15.7	13.0	13.3	12.6	3.0	1.8	9.0	6.6
Available P_2O_5 p.p.m. (Truog)	30	56	50	27	Trace	Trace	10	10	11	10	29	25	28	16
Citric P_2O_5 p.p.m.	56	45	194	56	40	21	26	8	92	36	91	28	133	46
Exch. and water sol. bases mg. eqs./100 gms.														
Lime	7.55	7.42	2.05	1.50	3.33	2.77	3.90	3.65	6.00	5.10	10.47	6.20	5.44	5.02
Magnesia	13.05	14.78	1.62	3.08	3.15	1.50	2.93	7.35	7.41	9.83	12.06	16.40	14.26	11.77
Potash	0.31	0.29	0.26	0.22	0.46	0.39	0.44	0.32	0.51	0.38	0.59	0.27	0.60	0.27
Soda	1.51	2.22	0.17	0.34	0.31	0.60	0.27	0.52	0.64	1.21	1.33	3.28	0.90	2.86

Appendix II (*Contd.*).

(*b*) Soils of Manurial Trial Sites.

Plantation :—	Wales.				Uitvlugt.							
Field No. :—	10 Cottage A.		10 Cottage B.		70 Zeeburg.		64 Zeeburg.		33 East.		31 East.	
Sample No. :—	D. 1265	D. 1266	D. 1263	D. 1264	D. 1259	D. 1260	D. 1257	D. 1258	D. 888	D. 889	D. 1364	D. 1365
Sampling Depth :—	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	4.31	4.36	4.90	4.58	4.38	4.19	4.49	4.92	4.70	4.63	4.77	4.75
Exchange pH	3.73	3.78	3.98	3.89	4.09	3.99	4.24	4.09	4.16	3.96	3.92	3.85
M.P.S.	62.3	51.9	53.8	44.7	57.0	53.1	63.3	52.4	55.0	51.1	51.8	50.6
% Sand	6.0	11.0	10.0	13.0	3.5	2.0	4.5	1.0	7.6	2.1	9.5	6.5
Index of Texture	61	50	52	42	56	53	62	52	54	51	50	49
% Soluble Salts	0.037	0.034	0.039	0.022	0.620	0.550	0.970	0.049	0.035	0.026	0.015	0.012
% Organic Matter	7.82	5.08	2.95	5.34	5.15	2.36	8.09	3.11	4.09	1.47	3.80	1.72
% Nitrogen	0.266	0.220	0.309	0.203	0.430	0.328	0.496	0.185	0.254	0.137	0.224	0.120
Carbon/Nitrogen ratio	17.06	13.39	5.55	15.26	6.95	4.18	9.46	9.75	9.32	6.24	9.86	8.32
Rate of Solution	−15	−26	−11	−6	−6	965	−160	−45	4	5	−3	−3
Lime Requirement, Ton/acre $CaCO_3$	18.1	13.5	13.9	12.0	14.9	12.0	15.0	9.1	12.1	11.8	13.8	12.0
Available P_2O_5 p.p.m. (Truog)	35	22	26	15	120	54	>200	53	47	22	43	11
Citric P_2O_5 p.p.m.	196	79	167	68	692	234	570	148	121	33	...	...
Exch. and Water Sol. bases mg. eqs./100 gms.												
Lime	1.25	0.90	2.80	1.10	4.65	3.15	4.75	3.08	3.40	1.55	2.52	1.30
Magnesia	1.00	0.62	1.50	1.20	1.75	1.80	1.88	6.90	0.68	0.87	0.75	1.60
Potash	0.18	0.15	0.24	0.07	0.28	0.10	0.45	0.20	0.25	0.12	0.34	0.21
Soda	0.15	0.15	0.19	0.09	3.74	1.68	2.32	0.26	0.17	0.11	0.14	0.20

Appendix II *(Contd.)*.

(*c*) Soils of Flood-Fallow Trial Sites.

Plantation :—	Port Mourant.		Lusignan.	
Field No. :—	28 Tain Leeward.		H.	
Sample No. :—	B. 102	B. 103	D. 720	D. 721
Sampling Depth :—	0—1 ft.	1—2 ft.	0—1 ft.	1—2 ft.
Normal pH	5.92	6.29	5.01	4.83
Exchange pH	4.73	5.42	3.71	3.77
M.P.S.	51.1	56.0	51.3	49.8
% Sand	3.2	1.3	5.6	2.9
Index of Texture	50	56	50	49
% Soluble Salts	0.095	0.243	0.076	0.160
% Organic Matter	2.71	1.04	1.69	1.26
% Nitrogen	0.169	0.095	0.131	0.100
Carbon/Nitrogen ratio	9.315	6.348	7.482	7.340
Rate of Solution	12	43	8	30
Lime Requirement, Ton/acre $CaCO_3$	3.49	1.39	7.50	6.20

APPENDIX III.

Calendar of Agricultural Operations on Manurial Trial Sites.

Experiment No.	Page of Bulletin.	Estate.	Field.	Size of Plots, Acres.	Date of Planting.	Date of Applying Limestone and/or Slaked Lime.	Date of Applying Potash.	Date of Applying Superphosphate and/or Basic Slag.	Date of Applying Sulphate of Ammonia.	Date of Applying Nicifos.	Date of Applying Nitrate of Soda.	Date of Applying Nitro-chalk.	Date of Reaping.
A 8	77	Skeldon	7 E.M.	0.034	1933	—	—	—	12.X.34[2] 24.X.35[3] 6.X.36[4]	—	—	—	4.X.34[1] 2.X.35[2] 23.IX.36[3] 29.IX.37[4]
A 6	74	„	8 E.M.	0.034	1933	—	—	—	12.X.34[2] 24.X.35[3] 6.X.36[4]	—	—	—	4.X.34[1] 1.X.35[2] 22.IX 36[3] 29.IX.37[4]
A 4	72	„	8 Sp.	0.027	8.IX.34	—	—	—	13.X.34[1] 24.X.35[2] 6.X.36[3]	—	—	—	3.X.35[1] 24.IX.36[2] 30.IX.37[3]
A 1 C 1 D 1	69 92 100	Port Mourant	23 R.	0.051	13.VIII.36	8.IX.36[1, 5]	8.IX.36[1]	8.IX.36[1, 6]	8.IX.36[1]	—	—	—	10.VIII.37[1]
B 1	90	Albion	31 K.	0.041	31.VIII.34	5.IX.34[1]	—	—	—	—	—	—	17.IX.35[1] 17.IX.36[2] 11.VIII.37[3]
A 2 C 2 D 2	70 94 100	Rose Hall	81 R.H.	0.041	11.I.36	18.I.36[1, 5]	26.II.36[1] 3.II.37[2]	26.II.36[1, 6] 3.II.37[2, 6]	26.II.36[1] 3.II.37[2]	—	—	—	21.I.37[1] 3.XII.37[2]
B 2	90	Blairmont	71 B.L.	0.051	4.VIII.34	10.VIII.34[1]	—	—	—	—	—	—	10.X.35[1] 7.X.36[2] 7.X.37[3]

[1]Plants. [2]First Ratoons. [3]Second Ratoons. [4]Third Ratoons. [5]Basic Application. [6]Superphosphate. [7]Basic Slag.

Appendix III (*Contd.*).

Calendar of Agricultural Operations on Manurial Trial Sites.

Experiment No.	Page of Bulletin.	Estate.	Field.	Size of Plots, Acres.	Date of Planting.	Applying Limestone and/or Slaked Lime.	Applying Potash.	Applying Superphosphate and/or Basic Slag.	Applying Sulphate of Ammonia.	Applying Nicifos.	Applying Nitrate of Soda.	Applying Nitrochalk.	Reaping.
A 3 C 3 D 3	70 94 100	Blairmont	26 Rp.	0.041	6.XII.35	25.I.36[1, 5]	24.II.36[1] 14.I.37[2]	24.II.36[1, 6] 14.I.37[2, 6]	24.II.36[1] 14.I.37[2]	—	—	—	25.XI.36[1] 10.XI.37[2]
A 16 C 9	84 96	Cane Grove	36 S.D.	0.040	21.XI.36	25.XI.36[1]	—	—	18.XII.36[1]	18.XII.36[1]	18.XII.36[1]	18.XII.36[1]	14.XII.37[1]
A 9 C 4 D 4	79 96 101	,,	4 P.	0.041	26.IX.36	7.XI.36[1, 5]	11.XI.36[1]	25.XI.36[1, 7]	11.XI.36[1]	—	—	—	12.X.37[1]
C 11	97	,,	53 M.	0.051	14.IV.34	—	—	15.VI.34[1, 6] 19.VI.35[2, 6] 29.IV.36[3, 6] 10.V.37[4, 6]	—	—	—	—	21.V.35[1] 9.IV.36[2] 18.III.37[3] 31.III.38[4]
B 3	90	Enmore	16 E.P.	0.051	28.VII.34	31.VII.34[1]	—	—	—	—	—	—	2.X.35[1] 8.IX.36[2] 12.VIII.37[3]
A 7	74	Lusignan	26 W.	0.034	1933	—	—	—	25.IX.34[2] 5.IX.35[3] 16.X.36[4]	—	—	—	11.IX.34[1] 21.VIII.35[2] 3.IX.36[3] 20.VII.37[4]
A 5	72	Ogle	45 O.	0.041	28.VII.34	—	—	—	2.X.34[1] 8.I.36[2] 30.X.36[3]	—	—	—	23.X.35[1] 6.X.36[2] 11.X.37[3]

[1]Plants. [2]First Ratoons. [3]Second Ratoons. [4]Third Ratoons. [5]Basic Application. [6]Superphosphate. [7]Basic Slag.

APPENDIX III (*Contd.*).

CALENDAR OF AGRICULTURAL OPERATIONS ON MANURIAL TRIAL SITES.

Experiment No.	Page of Bulletin.	Estate.	Field.	Size of Plots, Acres.	DATE OF								
					Planting.	Applying Limestone and/or Slaked Lime.	Applying Potash.	Applying Super-phosphate and/or Basic Slag.	Applying Sulphate of Ammonia.	Applying Nicifos.	Applying Nitrate of Soda.	Applying Nitro-chalk.	Reaping.
B 4	90	Ogle	45 O.	0.042	28.VII.34	3.VIII.34[1]	—	—	—	—	—	—	22.X.35[1] 7.X.36[2] 11.X.37[3]
A 12 C 5	84 96	Wales	10 C. (A)	0.038	26.IX.36	—	—	28.X.36[1, 7]	28.X.36[1]	28.X.36[1]	28.X.36[1]	28.X.36[1]	24.XI.37[1]
A 13 C 6	84 96	,,	10 C. (B)	0.038	26.IX.36	—	—	28.X.36[1, 7]	28.X.36[1]	28.X.36[1]	28.X.36[1]	28.X.36[1]	18.XI.37[1]
A 11	83	Uitvlugt	33 E.	0.042	20.II.34	15.V.34[1, 5]	21.VI.34[1, 5]	—	21.VI.34[1] 8.X.35[2] 21.X.36[3]	—	—	—	11.IX.35[1] —.IX.36[2] 28.VII.37[3]
A 10 C 10 D 5	80 96 103	,,	31 E.	0.034	22.II.36	24.I.36[1, 5]	26.III.36[1] 13.V.37[2]	23.I.36[1, 7] 13.V.37[2, 7]	24.III.36[1] 13.V.37[2]	—	—	—	17.III.37[1] 13.IV.38[2]
A 15 C 8	84 96	,,	70 Z.	0.034	26.VII.36	—	—	21.X.36[1, 7]	21.X.36[1]	21.X.36[1]	21.X.36[1]	21.X.36[1]	9.VIII.37[1]
A 14 C 7	84 96	,,	64 Z.	0.034	12.IX.36	—	—	22.X.36[1, 7]	22.X.36[1]	22.X.36[1]	22.X.36[1]	22.X.36[1]	27.X.37[1]

[1]Plants. [2]First Ratoons. [3]Second Ratoons. [4]Third Ratoons. [5]Basic Application. [6]Superphosphate. [7]Basic Slag.